

Shielded, Defiant, or Constrained Cities:
Local Climate Policy in Multilevel Governance

by
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ABSTRACT

As global climate commitments falter, subnational governments are increasingly called upon to lead climate action while bearing growing responsibilities for responding to escalating climate impacts such as extreme heat and flooding. U.S. cities have actively developed climate action plans since the 2000s, yet whether cities adopt them varies even among cities facing similar levels of climate risk and public pressure. Why do some cities act while others do not? Existing literature offers only a partial answer, tending to focus on local-level drivers while overlooking the broader institutional landscape in which cities operate—most notably, the role of state governments in enabling or constraining local climate action.

This dissertation employs Qualitative Comparative Analysis, focusing on the largest city in each of the 50 U.S. states, to identify configurational pathways that explain the adoption and non-adoption of formal climate action plans. Three findings emerge. First, public support is not a necessary condition for adoption; institutional conditions, particularly Democratic mayoral leadership and local government capacity, are more consistent drivers. Second, home rule authority functions as a critical shield against state preemption, and where it is absent, cities must mobilize multiple compensatory conditions to overcome institutional barriers. Third, applying an inaction typology to climate governance reveals that non-adoption reflects distinct configurations of institutional and political conditions rather than a simple absence of them.

This dissertation makes three contributions. First, it advances the local policy adoption literature by introducing a multilevel institutional lens, identifying climate policy as an emerging frontier of state preemption, and developing a “Sword and Shield”

framework applicable across policy domains. Second, it challenges assumptions of uniform policy diffusion, demonstrating that home rule authority is a critical, undertheorized determinant of whether cities can act independently. Third, it demonstrates the explanatory value of inaction typology, treating non-adoption as a theoretically meaningful outcome and revealing that why cities do not act is as analytically significant as why they do. These findings suggest that understanding local climate governance requires attending not only to what cities *do*, but to the institutional terrain shaping what they *can do* but choose *not to*.

DEDICATION

To Seoelle and Noah for their love and patience

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1 INTRODUCTION

Climate change is one of the most significant challenges society faces, evidenced by the increasing intensity and frequency of extreme weather events globally (Bartusek et al., 2022; Bhatia et al., 2019; Cunningham et al., 2024; J. Kim et al., 2023; Stephens et al., 2024). Extreme temperatures and erratic precipitation are already disrupting every dimension of urban life (Melillo, Richmond, and Yohe 2014). Between 2006 and 2021, a significant share of major disasters (e.g., extreme heat, flooding, wildfires, tornadoes, hurricanes) in the United States (U.S.) struck urban areas (Stephens et al. 2024). Hurricanes and storms not only claimed a substantial number of lives but also caused billions in property damage (Stephens et al. 2024). The severity and frequency of heat waves have outpaced even the most extreme projections of previous climate models (Bartusek, Kornhuber, and Ting 2022; Philip et al. 2021). Heat-related injuries and deaths surged across the U.S., especially between 2016 and 2023 (Howard et al. 2024).

Rising climate-related disasters and stalling global progress in greenhouse gas (GHG) emission reductions have made climate adaptation an increasingly urgent priority (Khan and Roberts 2013). While mitigation efforts remain essential, cities are increasingly facing mounting urgency to adapt to both existing and future climate impacts. Although recent Conference of Parties (COPs) meetings have advanced agreements on deforestation and adaptation financing, they have yet to produce the aggressive, immediate policy action global communities demands (Nyirenda 2023).

Addressing climate change requires not only a breadth of policy measures for mitigation and adaptation, but also actions across levels of government and multiple

sectors (Yusuf et al., 2022). However, the second Trump administration has adopted policies that constrain science-based climate action and weaken environmental protection agencies (Fiorino, 2025). This change has heightened the burden on local governments to sustain climate efforts. Without continued intervention, rising greenhouse gas emissions will accelerate global temperature increases, degrading critical public goods, such as biodiversity, air, and water resources (Collins et al., 2013; Kling et al., 2025). In this context, local governments become central to filling the gap for bold climate actions, as the impacts of climate change and potential solutions are primarily at the local level (Vogel and Henstra 2015).

1.1 Research Scope and Questions

Urban cities concentrate industries and activities that generate carbon emissions. At the same time, city governments have authority and experience in coordinating climate actions between partners, making them key arenas for implementing climate action (Betsill & Bulkeley, 2006; Hughes et al., 2018). Cities have emerged as crucial innovators in responding to climate change (Vogel & Henstra, 2015), spurring extensive research on the extent and factors of local climate policy adoption (e.g., Braunschweiger & Ingold, 2023; Dilling et al., 2017; Giordono et al., 2020; Kalafatis, 2018; Kang et al., 2023; J. Kim, 2025; Krause, 2011; Nohrstedt et al., 2022; Yeganeh et al., 2020). Nevertheless, there is nothing inherent about cities as the desirable scale for environmental policies; their prominence instead reflects the outcome of political

struggles with higher-level governments, shaped by competing political and economic interests (Christopher Brown & Purcell, 2005).

In the U.S., cities are “creatures of the state,” deriving their authority to govern local affairs from state governments within boundaries defined by state law (Frug, 1984). This hierarchical relationship allows states to preempt local climate initiatives when local policies conflict with state priorities (Weiland, 2000). While home rule grants local governments some autonomy to act independently, these efforts can provoke intergovernmental conflict when political or environmental priorities diverge (Bowman, 2017). Local climate policies are often caught in this crossfire.

Previous research on local climate policy adoption has overlooked this state-local institutional arrangement. Although the literature on polycentric climate governance acknowledges that states exercise power over local actors, the analytical focus has been on the state as either a collaborator or a leading actor in driving local climate actions by setting regulations and providing resources through funding (Kellner et al., 2024). Instead, this dissertation focuses on how states use their preemption power to curtail local climate actions and how it influences local climate inaction.

This dissertation advances the literature on local climate policy adoption by explicitly situating local governments within multilevel climate governance. I ask three research questions: 1) How do local factors shape municipal governments’ climate policy adoption? 2) How do cities navigate institutional barriers such as state environmental preemption laws to adopt local climate policies successfully? 3) Why do some cities *not* adopt climate policies? This dissertation addresses these questions by examining the

largest city from each of the 50 U.S. states, providing a nationally representative yet locally grounded comparative sample. I employ Qualitative Comparative Analysis (QCA), a configurational method suited for comparative analysis of medium-N samples in which multiple pathways to the same outcome are theoretically expected.

1.2 Research Significance

This dissertation makes three contributions to the literature. Previous studies have consistently shown that strong public support is crucial for adopting local climate policies (Flynn et al., 2019; Krause, 2012; Massey et al., 2014; Yeganeh et al., 2020). This knowledge has been generated by examining *whether* various measures of public support (e.g., supportive public opinion and higher education level) are statistically significantly associated with the adoption of local climate policy. Statistical analysis assumes symmetrical relationships—the presence of public support measures positively correlates with local climate policy adoption, then its absence negatively correlates with non-adoption. This presumed symmetry of the relationship may not accurately reflect the complex reality. Local policymaking environment involves dynamic urban politics that contribute to the adoption decision of local climate policy (Hughes, 2017). The same factors that enable policy adoption may operate differently across varying local contexts, highlighting the need for a more nuanced understanding of how social, environmental, and institutional factors interact to shape policy adoption outcomes (J. Kim, 2025). Local climate policy presents an ideal context for examining these interactions.

Research about the decision mechanisms and strategies local governments employ to navigate political power dynamics to adopt—or refrain from adopting—climate policy

remains limited (Hughes, 2017). Previous studies reflect a ‘new localism’ perspective, which conceptualizes cities as self-contained entities endowed with sufficient economic, social, and institutional competencies (Marvin & Guy, 1997). This approach neglects cities’ interdependence with higher levels of government (Bulkeley & Betsill, 2005). Local climate policies cannot be understood apart from multilevel relationships, and state-local institutional arrangements can either constrain or enable local climate action (van der Heijden et al., 2019). There is a need for a more nuanced understanding of how power dynamics between local and higher-level governments, as reflected in institutional constraints, shape this policy decision. State preemption laws exemplify one critical legal constraint, representing a hierarchical exercise of power that directly curtails local autonomy in climate action (Amsler & Vieilledent, 2021). Through preemption, state governments effectively redirect the locus of decision-making authority upward, systematically constraining municipal discretion and limiting local governments’ capacity to pursue independent policy innovation (Schragger, 2017), regardless of local political will or environmental imperatives. This unfavorable intergovernmental environment can lead to policy inaction.

The study of policy inaction remains underexplored in policy scholarship. The field’s intellectual focus has long centered on understanding public policy as *intervention*, emphasizing action over inaction (McConnell & ’t Hart, 2019). This imbalance is partly rooted in dominant methodological choices relying on regression analyses. However, statistical models assume that the presence of statistically significant factors driving climate policy adoption implies that their absence explains non-adoption (J. Kim, 2025).

This presumed symmetry in statistical relationships fails to capture the asymmetries that may underlie climate policy adoption and non-adoption.

Understanding climate policy inaction requires examining a distinct set of conditions that differ from the traditional models of policy adoption. Instead of assuming that the absence of policy stems from a lack of enabling factors, this dissertation emphasizes that non-intervention results from specific combinations of conditions that generate decision-making mechanisms that suppress or delay policy responses. Drawing on the concept of policy inaction and the climate policy adoption literature on barriers, this dissertation sheds light on how institutional arrangements, partisanship, and administrative capacities interact to shape local climate policy inaction (i.e., non-adoption).

The insights gained from this research on local climate policy *adoption* and *non-adoption* are particularly salient amid a period of national climate policy retrenchment (Fiorino, 2025), as some states—especially conservative ones—seek to prohibit or limit climate regulation. While state preemption can suppress local action (Amsler & Vieilledent, 2021; Briffault et al., 2023), it may not uniformly prevent cities from adopting climate policies (Riverstone-Newell, 2017). Understanding how cities navigate institutional constraints advances knowledge of multilevel climate governance and offers practical insights into sustaining local climate leadership under restrictive state conditions.

1.3 Organization of the Dissertation

This dissertation consists of eight chapters. Chapter 1 introduces the challenges of global climate change and its local impacts. It also explains research questions and research significance. Chapter 2 reviews the literature of local climate policy adoption, multilevel climate governance, and policy decision-making to develop research frameworks. Chapter 3 explains the method, Qualitative Comparative Analysis, and research design, which includes case selection, conditions and data, and analytical tool. Chapter 4 examines what explains local climate policy adoption. The chapter contributes to the existing literature by focusing on identifying multiple conjunctural pathways to local climate policy adoption. Chapter 5 examines the role of state environmental preemption laws and local autonomy in explaining local climate policy adoption. This chapter fills the gap in the local climate policy adoption literature by explicitly linking it with a multilevel institutional environment. Chapter 6 examines what decision mechanisms explain local climate policy inaction. Building on the theories of policy inaction, this chapters addresses the rarely examined question of climate policy inaction. Chapter 7 includes the synthesis of findings and implications, research limitations, and future research. Chapter 8 concludes the dissertation.

2 MULTILEVEL CLIMATE GOVERNANCE

2.1 Overview

During the neoliberal urban transformation of the early 2000s, cities increasingly became focal sites of capital accumulation, governance experimentation, and socio-spatial restructuring (Brenner & Theodore, 2005), rescaling the political economy and shifting analytic attention toward the local level (Swyngedouw, 2004). This rescaling of political and economic activity coincided with the growing recognition that cities are simultaneously major contributors to climate change and primary sites of climate vulnerability. Urban cities now account for the majority of global energy consumption and carbon emissions, while also concentrating populations exposed to extreme heat, flooding, and other climate risks (Creutzig et al., 2015; Lwasa et al., 2022; Stephens et al., 2024).

These dual roles that cities play as both drivers of climate change and frontline responders have elevated local governments as central actors in climate governance. Yet cities do not operate as independent policy laboratories. In the U.S., municipal authority is legally and institutionally nested within state governments, creating a multilevel governance context in which local climate action is enabled or constrained. Understanding why some cities adopt climate policies while others remain inactive, therefore, requires moving beyond treating cities in isolation. Instead, it calls for examining how local political, administrative, and environmental conditions interact with broader state-level institutional frameworks—an area that remains a significant gap in the existing literature.

2.2 Local Climate Policy Adoption¹

Traditional comparative policy studies have focused on identifying commonalities and differences among political systems to explain the differing policy outcomes observed across states (Bloomquist, 2007). Similarly, theories of policy change and diffusion include both internal and external political factors, as well as policy-specific factors, to explain the state's policy outcomes (e.g., Berry & Berry, 1990; A. Jordan & Huitema, 2014; Y. Kim & Verweij, 2016). For example, Sapat (2004) developed a model to explain state adoption of environmental policy innovations, which includes the internal capacity of state agencies (e.g., managerial staff in hazardous waste cleanup programs), the state's political climate (e.g., liberal public opinion), and the severity of the problem. This framework has been expanded to examine the adoption and diffusion of local policies (e.g., Shipan & Volden, 2008). For example, Sharp and colleagues (2011) examined political institutions, interest-group pressure, and problem severity to explain a city's decision to develop and implement a climate mitigation policy.

Table 2.1 summarizes the major underlying theories, the example variables used to test each theory, and the key findings of previous research that examined local climate action or climate policy adoption specifically. Under interest group theory, research has examined variables such as political leaning, manufacturing dependence, public opinion, and education level (Krause, 2012), finding that cities with strong public support,

¹ Section 2.2 is excerpted from J. Kim (2026), while Chapter 4 presents the results of the same paper using an extended sample of cities.

particularly those with a Democratic mayor and favorable opinion toward CO₂ regulation, show the greatest likelihood of local climate policy adoption (Yeganeh et al., 2020).

Government capacity theory highlights the role of fiscal resources, dedicated sustainability staff, and participation in transnational networks, with evidence suggesting that having dedicated sustainability personnel and membership in ICLEI are among the strongest institutional drivers of local climate action (Krause, 2012; Sharp et al., 2011).

Finally, the risk-based theory draws on variables such as exposure to extreme weather events, risk perception, and coastal location (Brody et al., 2008; Zahran et al., 2008).

However, empirical evidence here remains mixed, ranging from risk factors being a significant driver to their effects being contingent on other contextual conditions (Nohrstedt et al., 2022). Below I review primarily research that identified the key findings highlighted in Table 2.1.

Table 2.1 Local climate policy adoption framework

Theory	Variables Tested (examples)	Significant Findings
Interest group	Democratic-leaning, manufacturing dependence, public opinion, education level, income	Cities with strong public support (measured through Democratic mayor , % population with higher education, supportive opinion on regulating CO₂) have the largest positive impact on local climate policy adoption (Yeganeh et al., 2020)
Capacity (government)	fiscal capacity, dedicated sustainability staff, participation in transnational networks	Having dedicated sustainability staff leads to the greatest increases in local climate action (Krause, 2012) Participating in ICLEI leads to the increase in local climate action (Sharp et al., 2011)
Risk-based	extreme weather events, risk perception, coastal location	Empirical evidence is mixed from being an important driver to their effect is conditional on other factors (Nohrstedt et al., 2022)

2.2.1 Public Support

Research shows that some community characteristics—including environmental attitudes and educational attainment—are significant predictors of local climate policy adoption (Yeganeh et al., 2020). Scholars have used various terms to refer to these characteristics, such as public support, civic capacity, community interest, citizen preferences, and organized interests, depending on research contexts (Krause, 2012; Sharp et al., 2011; Switzer, 2019; Zahran et al., 2008). Here I use the term public support to refer to local citizens’ collective attitudes (e.g., public opinion or public awareness) and behaviors toward policies that affect the environment (Wan et al., 2017).

Public support plays a significant role in the adoption of climate mitigation policies (Anderson et al., 2017; Tjernström & Tietenberg, 2008). Those who support climate mitigation strategies also tend to endorse climate adaptation strategies (Brügger et al., 2015). Specifically, a high level of public awareness regarding the impacts of climate change has been shown to be essential for supporting climate adaptation actions (Flynn et al., 2019; Massey et al., 2014). The public tends to support climate policies if they believe in anthropogenic global warming, provided the policy does not impose significant costs on citizens (Bakaki & Bernauer, 2017; Fairbrother, 2022).

Given these findings, we can infer that local climate policy tends to be adopted *as* public support increases, whereas the policy may not be adopted as public support decreases. However, these findings do not necessarily indicate whether local climate policy adoption requires certain level of public support as a *prerequisite* or not (i.e., a necessary condition). If it is a prerequisite, local governments in cities with low public support may face challenges in enhancing climate resilience, given that “climate change” is a politically charged term. If it is not a necessary condition, we can further inquire into the circumstances under which cities with low public support can adopt climate policies.

2.2.2 Democratic Mayors

In the U.S., where climate change remains highly polarized (Funk & Kennedy, 2016), public opinion driven by liberal political ideology is found to be associated with a stronger concern for environmental issues and the tendency to adopt climate policy (Giordono et al., 2020; Rai, 2020). Studies often use partisanship data on presidential elections; however, the political ideology of the federal government has shown little

influence over local policy decisions in the context of U.S. climate policies (Gerber 2013). Instead, a mayor's party affiliation reflects public expectations of local policy outcomes (de Benedictis-Kessner & Warshaw, 2016; Tausanovitch & Warshaw, 2014). Localities with Democratic electorates and elected Democrats showed a strong association with the adoption of local climate policies (Gerber 2013). Democratic mayors often serve as local climate "champions," leveraging their charismatic leadership and network-building to drive effective climate actions in their cities (Haus et al., 2004; Hughes et al., 2018).

2.2.3 Climate Risks

Experiencing extreme events is a critical factor that drives governments to take policy actions (Birkland, 2006). U.S. cities face diverse climate risks, from flooding to heat waves (Stephens et al., 2024), which vary in both type and magnitude across regions. Differences in both the frequency of events (e.g., number, long-term patterns) and their severity (e.g., economic losses, fatalities) shape local responses (Braunschweiger & Ingold, 2023; Giordono et al., 2020; Kalafatis, 2018; Rai, 2020). Cities develop strategies not only to respond to historically experienced events (such as past flooding) but to prepare for potential disasters not yet experienced locally, such as extreme heat from rising temperatures (Nohrstedt et al., 2022). Therefore, local climate actions reflect consideration of both actual climate risks based on past disaster experiences and projected risks from possible climate threats. Brody and colleagues (2008) demonstrated that counties with higher climate risk, measured through a combination of past

experiences (i.e., casualties) and future projections (i.e., coastal proximity, expected temperature change from 2004 to 2099), are more likely to adopt climate policies.

The impact of disasters can act as a change agent, raising citizens' awareness and perceptions of future risks, thereby shaping disaster responses (Birkmann et al., 2010). Perceived climate risks among the general public are likely to support climate adaptation policy (van Valkengoed et al., 2022). For example, as citizens recognize that global warming is happening and humans are responsible for the cause, they are more likely to engage in collective climate change activism, including voting for candidates who support climate policies (Latkin et al., 2023; Roser-Renouf et al., 2014).

While both actual and perceived climate risks were conceived as important drivers of climate policy adoption (Dilling et al., 2017), a few studies found that actual climate risk (e.g., coastal areas) is not necessarily a significant driver of climate policy adoption compared to public support measures, such as high income, education, and environmental concern (Brody et al., 2008; Zahran et al., 2008). Nohrstedt and colleagues (2022) concluded that it is not necessarily actual risk that drives the adoption of climate adaptation policy unless cities have the institutional capacity to utilize the knowledge required for adaptation policymaking. The role of climate risk in the successful adoption of climate policies may depend on government capacity.

2.2.4 Government Capacity

The government's administrative capacity to adapt to climate change is a fuzzy concept to operationalize, considering the expansive boundary of the governance system. Multiple variables were tested to capture this condition, from fiscal and staff capacity

(Krause, 2013) to transnational networks, such as Local Governments for Sustainability (ICLEI) (Krause, Yi, et al., 2016; Sharp et al., 2011).

Climate policies, such as nature-based solutions (a.k.a., green infrastructure, greening), require highly technical knowledge, expertise, and experience in a comprehensive understanding of natural ecosystems and their delicate impacts on society and biodiversity (Kabisch et al., 2016). Dedicated sustainability staff (e.g., Chief Sustainability Officer) and participation in transnational networks (ICLEI) can enhance local capacity by facilitating policy learning, providing necessary resources, and coordination (Bae & Feiock, 2013; Frantzeskaki et al., 2019; Krause, 2012; Sharp et al., 2011). These networks can empower cities to initiate climate policies independent of their higher-level governments' inactions, representing a horizontal or polycentric mode of governance (Bansard et al., 2017; Betsill & Bulkeley, 2006; Bulkeley & Betsill, 2005). Membership in such networks can enhance local governments' ability to design, adopt, and implement climate policies, whereas non-membership may contribute to reluctant inaction by limiting access to knowledge and learning (Moser & Ekstrom, 2010; Pahl-Wostl, 2009). Given the technical knowledge, expertise, and experience that climate policies require, administrative or network capacity-constrained local governments can struggle to initiate necessary sustainability projects to protect their citizens from climate-related disasters (Deslatte et al., 2023; Homsy & Warner, 2015).

2.2.5 Local Climate Policy Adoption Framework

The literature review suggests that these conditions are not independent but potentially contingent on one another. Each of the four conditions above can describe

cities in two qualitatively different states (e.g., high or low), and the theoretical expectations drawn from the alignment of the factors and expected policy outcomes are shown in Figure 2.1. Strong evidence of public support in the climate policy literature leads to testing if high public support is a prerequisite for local climate policy adoption. If public support is not a prerequisite, Democratic mayoral leadership may be part of sufficient conditions. The role of climate risk in explaining the adoption of local climate policy may be conditional on government capacity. High government capacity may facilitate local policy adoption when public support *or* climate risk is low, but it may be insufficient to explain policy adoption in isolation.

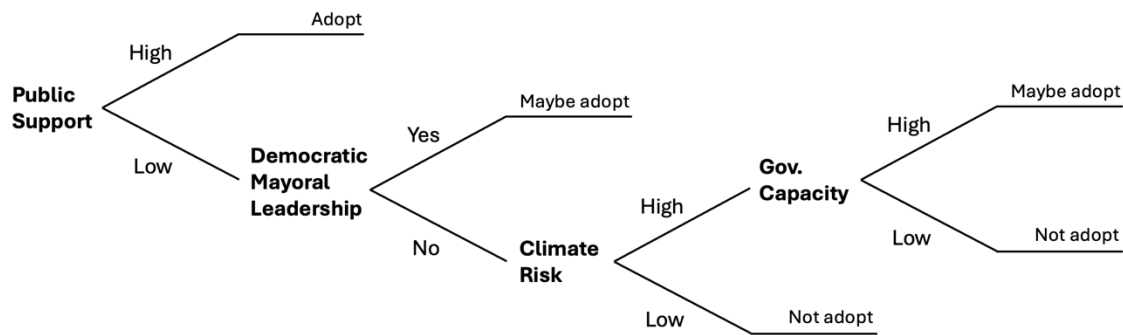


Figure 2.1 Alignments of critical local factors for the climate policy adoption

This framework, derived from the local climate policy adoption literature, summarizes and advances how political, administrative, and environmental conditions at the local level interact to shape the adoption of climate policies. However, these local policy choices unfold within a broader state-local institutional context that the existing

literature often overlooks. The foundational principle of American local government is that cities are legal and institutional entities embedded within an intergovernmental hierarchy that draws its authority. The state-defined legal boundary fundamentally sets up the opportunities and constraints, shaping strategic options available to cities as they decide to pursue or forego climate action. This multilevel governance dynamic has undertheorized in the literature. Understanding how cities respond to multilevel institutional environments for climate actions is therefore crucial for explaining local climate policy adoption.

2.3 Intergovernmental Legal Arrangements

A key focus of multilevel climate governance research is how actors across scales and sectors shape urban climate action, and how governing entities at different levels collaborate, negotiate, and manage interdependencies to address climate change (Bulkeley & Betsill, 2013; Heinen et al., 2022). Higher-level governments delegate the decision-making powers to lower-level governments, which can then exercise self-governing power over specific affairs within their jurisdictions (Weiland, 2000). When decision-making powers are shared across nested jurisdictions, divergent political and economic interests can generate conflicts and undermine local autonomy over climate actions (van der Heijden et al., 2019). Existing studies often portray higher-level governments as facilitators or collaborators in shaping local climate actions, overlooking power conflicts that emerge from “the rule of laws” (Hughes et al., 2018; Kellner et al., 2024; Marquardt, 2017). This limits our understanding of how state governments may

influence cities' adoption of climate policies when political disagreements arise between the two levels of government.

2.3.1 State preemption Laws

State governments can enact *state preemption laws* that expand state authority while constraining local power, prioritizing state-level policy uniformity over municipal autonomy and local preferences (Bowman, 2017; Goodman et al., 2021). Although the definition and types of state preemption vary, Goodman, Hatch, and McDonald (2021) identified four distinct epochs in which states shifted the focus and style of preemption: limiting local government growth (“ceiling,” which prevents any policy/regulation exceeding a state minimum) during the 1970s and 1980s; imposing unfunded mandates (“floor,” which allows any policy/regulation above the statewide baseline) during the 1990s; targeting public health regulations influenced by powerful interest groups, such as tobacco industry (“ceiling” and “vacuum,” which prevents local action without a statewide standard) in the early 2000s; and, in recent decades, adopting ideology-driven preemption (“vacuum” and “punitive,” which punishes noncompliance).

Each epoch reflects distinct state priorities and regulatory strategies, shaping how local governments can respond to state intervention. For example, the latest epoch—commonly described as the “new preemption”—not only restricts local regulatory authority across a wide range of policy domains, arguably reflecting growing ideological polarization between states and their cities, but also provides local governments limited options for response, as it imposes penalties on local officials and governments for noncompliance (Briffault, 2018; Swindell et al., 2019). Without enacting substitute state

policies, this form of preemption has expanded rapidly in both scope and intensity, leaving municipalities increasingly constrained in their ability to meet the needs of their community (Goodman et al., 2021; Riverstone-Newell, 2017).

Recent studies document a sharp increase in the number of preemption statutes adopted since the early 2000s, particularly in states with Republican-dominated governments, where preemption is increasingly deployed as a strategic political tool to suppress local policy innovation rather than to resolve intergovernmental coordination challenges (Briffault, 2021; Riverstone-Newell, 2017).

Figure 2.2 shows the increasing trend of state preemption in various policy areas since 2019: Ban-the-Box, firearms, inclusionary zoning, municipal broadband, paid leave, rent control, transgender right, and race and racism school curriculum. The number of states that has issued preemption laws in these areas has remained stable or increased between 2019 and 2024. The sharp increase in the areas related to transgender right and race and racism school curriculum is evident in the figure.

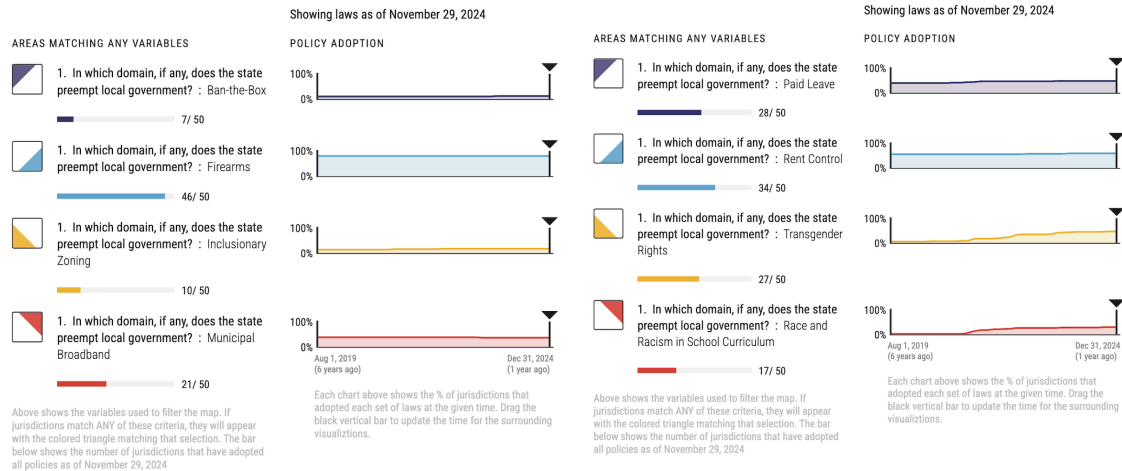


Figure 2.2 Preemptions rarely decreased across topics in five years

Source: Temple University Center for Public Health Law Research (2025, June 24). State Preemption Project. LawAtlas.org. [LawAtlas.org/datasets/preemption-project-20240221142648](https://lawatlas.org/datasets/preemption-project-20240221142648).

While environmental policy issues are not yet on this specific chart, states have intervened in more polarized policy areas, such as public health, labor, immigration, antidiscrimination, equitable housing, environmental protection, and sustainability (Briffault et al., 2023). In the environmental policy domain, this trend has manifested in specific areas where municipalities have sought to act on climate-related concerns, such as restrictions on local regulation of utility connections for building decarbonization and on single-use plastics (Haddow, 2021; Walker & Malmuth, 2024). Walker and Malmuth (2024) show that state preemption on building decarbonization increased significantly around 2021. State preemption on utility connections restricts cities from enacting any ordinances, policies, or resolutions that would prevent or restrict the connection or reconnection of certain utility services (e.g., fossil fuel and propane). For example,

Arizona’s HB 2686 states that a municipality may not deny a building permit application based on the utility services.

Local regulations on plastic bags or containers marked the beginning of the new preemption era (Briffault, 2018). Briffault (2018) explains that environmental concerns and cleanup costs led major cities to ban or tax the use of plastic bags. However, states have strongly enforced preemption of local plastic bag regulations, arguing that banning plastic bags conflicts with consumers’ and businesses’ choices. State preemption on plastic bags restricts cities from imposing a tax, fee, assessment, charge, or return deposit on the use, sale, or disposition of auxiliary containers. For example, South Carolina’s HB3529 states that any ordinance enacted by its political subdivisions to “regulate the use, disposition, sale, or any imposition of any prohibition, restriction, fee imposition, or taxation of auxiliary containers at the retail, manufacturer, or distributor” is superseded and preempted by the state. Some states also impose environmental preemption on banning hydraulic fracturing and the use of polystyrene products (Briffault, 2018).

Table 2.2 summarizes the two most prevalent state preemption laws on local environmental actions.

Table 2.2 State environmental preemption laws

Subject	General description
Utility connections	Restricts cities from enacting any ordinances, policies, or resolutions that would prevent or restrict the connection or reconnection of certain utility services (e.g., fossil fuel, propane)
Plastic containers	Restricts cities from imposing of a tax, fee, assessment, charge, or return deposit on the use, sale, or disposition of auxiliary containers

Unlike earlier generations of preemption designed primarily to promote policy uniformity across states, contemporary environmental preemption often functions as a “chilling effect,” foreclosing local experimentation and deterring municipal action through legal uncertainty and the threat of sanctions (Briffault et al., 2023; Rutkow et al., 2019). As a result, state environmental preemption increasingly reshapes the institutional decision-making context, pushing cities to evaluate the political, legal, and administrative feasibility of pursuing local climate policies to avoid potential costs of action. Whether environmental preemption ultimately results in policy inaction, however, depends on the broader institutional arrangements within which cities operate—most notably, the extent and strength of municipal home rule authority.

2.3.2 Home Rule Authority

Home rule provides municipalities with varying degrees of self-governing authority to regulate local affairs and safeguard their regulatory powers against state interference (Berman, 2020; Weiland, 2000). State constitutions typically grant home rule authority, or legislatures authorize municipalities to adopt home rule through city charters, although this form of authority is generally less secure (Berman, 2020). A

substantial body of scholarship examines the appropriate balance between local autonomy and state oversight, debating how to maximize municipal discretion and effectiveness, while guarding against arbitrariness, inequalities, and fragmentation (Krane et al., 2001). The central premise of local government is its responsiveness to the preferences and needs of local community; otherwise, dissatisfied citizens may “vote with their feet” by moving to other jurisdictions (Tiebout, 1956). Without substantial discretionary authority, however, local governments cannot maintain responsive public services. When governing responsibility is shifted upward to higher-level governments, constituents lose the ability to hold local officials accountable for policy decisions regarding public service delivery (Krane et al., 2001).

Municipal independence through home rule represents a democratic ideal in which local governments and citizens collaboratively decide on policy choices that reflect values of the community, thereby increasing citizen satisfaction with those decisions (Michels & De Graaf, 2010; Tocqueville, 2003). Yet constitutional power formally places local governments entirely within the authority of their respective states, making home rule neither uniform nor absolute. Its scope varies markedly across states and among individual municipalities within them, much like the varying degrees of preemption that states impose through both express and implicit mechanisms (National League of Cities, 2020; Weiland, 2000). This variation suggests that the state-local relationship creates critical differences in the democratic power citizens can exercise at the local level. Ultimately, how much genuine local autonomy exists depends heavily on the degree of discretionary authority a given state is willing to extend to its local governments.

While home rule confers meaningful legal standing, it does not automatically insulate cities from state interference, given the varying degrees of local discretion it provides (Krane et al., 2001), nor, in some cases, will local governments exercise their home rule authority at all (Berman, 2020). Even in home rule jurisdictions, states frequently retain substantial control over core local functions. The fragility of municipal autonomy is perhaps evident in cases such as Jackson, Mississippi, where the city lost authority over its water system, airport, and policing in certain neighborhoods (Briffault et al., 2023). When a local regulation conflicts with state law, the question of whose law prevails ultimately falls to state courts (Briffault, 2021), introducing legal uncertainty that can produce a “chilling effect” on municipal policy innovation (Briffault et al., 2023; Rutkow et al., 2019). Although a detailed analysis of judicial outcomes lies beyond the scope of this dissertation, the interaction between state preemption and home rule authority is central to understanding how institutional arrangements shape the opportunity structure for local climate policymaking.

Beyond the legal constraints imposed by preemption, home rule’s effectiveness also depends on whether local governments can mobilize political support, administrative capacity, and organized civic resources to invoke and defend their policy decisions (Berman, 2020). However, these resources are not equally available to all local governments. Smaller cities often lack the necessary infrastructure and civic capacity to leverage their authority, making them more vulnerable to state override (Richardson et al., 2003). Philadelphia Mayor of Jim Kenney captured this reality in response to the wave of state preemption between 2010 and 2018, “All we can do is kind of maneuver,

dodge and sue, and try to protect ourselves [from preemption] as best we can” (Quinton, 2017). Institutional autonomy must be activated and strategically leveraged; it cannot be assumed.

2.3.3 “Sword and Shield”

City practitioners navigating state environmental preemption face a core climate governance dilemma: they are held responsible for enhancing climate resilience yet lack full authority to coordinate with their local partners or implement necessary policies. To understand how different combinations of preemption pressures and home rule protections shape the institutional landscape in which cities operate, a multilevel institutional framework is needed.

Figure 2.3 introduces a “sword and shield” matrix that categorizes cities into distinct governance positions based on the presence or absence of state environmental preemption laws and home rule authority. Each institutional environment hypothesizes how cities may pursue climate action. The first quadrant—home rule without state preemptions— provides a favorable policy environment where cities can act as *frontrunners*, exercising autonomy and flexibility to pursue climate action (Bonnett & Birchall, 2023). The absence of state preemption laws may signal state support for local climate initiatives. The second quadrant—preempted but protected with home rule— provides an unfavorable state policy environment for cities. However, these cities with home-rule protection may become *defiant*, pursuing climate actions that are at odds with state law (Bowman, 2017). The third quadrant—an unfavorable state policy environment without home rule—reflects *constrained* cities, constrained in addressing climate

challenges due to limited authority and restrictive state policies. Finally, the fourth quadrant—a favorable state policy environment without home rule—characterizes *dependent* cities, which can pursue climate actions, but only within state-defined boundaries.

	State Preemptions	No State Preemptions
Home Rule	“Defiant” (Bowman, 2017)	“Frontrunner” (Bonnett & Birchall, 2023)
No Home Rule	Constrained	Dependent

Figure 2.3 Multilevel institutional “Sword and Shield” matrix

State environmental preemption and municipal home rule function as opposing institutional forces, creating a multilevel landscape within which local climate governance unfolds. The tension can be understood as a “sword and shield” dynamic. State environmental preemption operates as a “sword” by restricting, overriding, or deterring local regulatory initiatives, while home rule serves as a “shield” that grants cities with self-governing power, preserving local discretion over environmental and climate policy decisions. This dynamic reflects broader insights from multilevel governance theory, where institutional arrangements at higher levels simultaneously condition the policy choices available to actors operating below them (Scott et al., 2023).

Critically, the presence of a “shield” does not neutralize the “sword.” Rather, it shapes the conditions under which cities must assemble political leadership, administrative capacity, and external networks to pursue climate action in the face of state constraints.

2.3.4 Multilevel Policy Adoption Framework

To address the limitation of prior research in accounting for the state policy environment, this dissertation incorporates the “sword and shield” framework on top of the local-level factors. Given the focus of this topic, one multilevel variable captures whether states have explicit environmental preemption laws that can curtail the adoption of local policies related to climate mitigation or adaptation. The other multilevel variable is the home rule authority that local governments may possess. Figure 2.4 includes these multilevel variables, in addition to local drivers: Democratic mayor, sustainability office, ICLEI membership, and high climate risk.

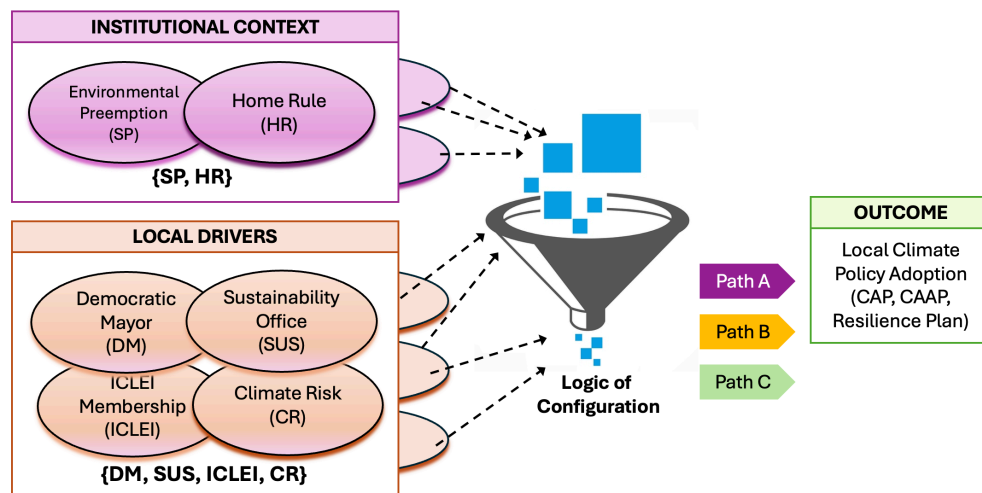


Figure 2.4 Multilevel climate governance research framework

Note. This framework explores combinatorial sufficiency rather than independent net effects

In summary, the multilevel climate governance literature has largely emphasized collaborative intergovernmental problem-solving processes, often treating higher-level governments as facilitators of local climate action (van Der Heijden, 2019). This emphasis has left the role of multilevel institutional arrangements—particularly state environmental preemption and municipal home rule—in shaping local climate policy adoption outcomes underexplored. As a result, existing research offers limited insight into how cities navigate constraining institutional environments or mobilize alternative resources to pursue climate policies. The literature also lacks a systematic analysis of how cities overcome state preemption laws and whether home rule provisions provide adequate institutional buffers against state interference. This dissertation develops configurational theories of local climate policy adoption within a multilevel climate governance system, filling these gaps.

However, the policy adoption framework cannot fully account for why some cities, facing similar challenges and opportunities, remain inactive. Despite growing commitments to climate action across national and municipal governments (A. J. Jordan et al., 2015), the adoption of climate actions remains highly uneven across governance levels and spatial scales (Stokes & Breetz, 2020). This variation raises a critical question in contemporary climate governance: what factors prevents some cities from seriously engaging in climate action? In other words, how do we explain climate policy *inaction*?

2.4 Non-Adoption as Policy Inaction

2.4.1 Defining Non-adoption

Studying policy inaction poses an analytical challenge because the empirical events in which governments deliberately “do nothing,” or nondecision, are difficult to observe (McConnell & ’t Hart, 2019; Shpaizman, 2020). While nondecision is, by definition, an unobservable nonevent, the process through which nondecisions are made can be rendered visible by examining power dynamics among actors and the mobilization of bias that drive nondecisions (Bachrach & Baratz, 1963; Schattschneider, 1960). Following this logic, scholars have distinguished policy inaction from nondecision, focusing instead on how policy issues undergo a decision-making process that ultimately concludes with *non-intervention*—a deliberate choice *not* to act (Brown & Stark, 2022; McConnell & ’t Hart, 2019). The key distinction, therefore, lies in the location of policy issues within the policy process.

Figure 2.5 illustrates how policy scholars draw the conceptual boundary of policy inaction. During the agenda-setting stage, decision-makers acknowledge the issue but deliberately choose not to intervene. The issue disappears from the formal agenda due to power dynamics and institutional constraints that prevent certain issues from gaining policy attention (Cobb & Elder, 1971; Shpaizman, 2020). In the context of climate policy, for example, biases against climate change and its threats are often mobilized by undermining scientific evidence, by politicizing messages on the economic burdens of climate action while minimizing the costs of inaction, and by aggressive lobbying efforts to block climate action from becoming a policy priority (Brulle, 2023).

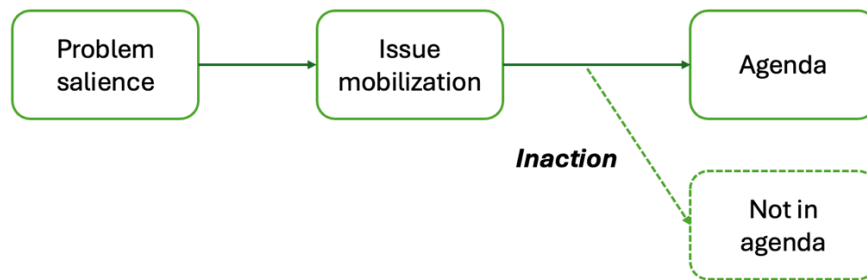


Figure 2.5 Policy inaction in policy process

Policy inaction, however, is not confined exclusively to the agenda-setting. It can also arise at various points in the policy cycle (Brown & Stark, 2022; McConnell & 't Hart, 2019). For example, inaction may emerge during implementation, when adopted policies are only partially or not enforced at all by administrators (Lipsky, 2010). Knowledge controversies and economic logics can disincentivize implementers, leading to failures in climate policy implementation (Sharman & Perkins, 2017). Such later-stage inaction does not necessarily reflect a deliberate governmental choice not to act; rather, it suggests discretionary choices made by implementers within the constraints of established rules. Because this dissertation focuses on factors shaping local governments' formal policy choices, it excludes implementation-stage inaction, which reflects administrative discretion rather than formal governmental decisions about whether to act.

In this dissertation, local climate policy inaction refers to the deliberate non-adoption of formal climate policies by local governments. Defining non-adoption as policy inaction is guided by Mahoney and Goertz's (2004) Possibility Principle, which

holds that negative cases should be selected when they exhibit at least one core independent variable theorized to produce the outcome of interest, making the outcome a realistic possibility. Following this principle, local climate policy non-adoption can be treated as policy inaction when adoption was a realistic policy option for a city, evidenced by the presence of at least one core driver of adoption (e.g., high climate risk). Policy inaction here, therefore, reflects one of the *deliberate* political choices not to adopt climate policy, rather than an absence of opportunity. This definition also aligns with McConnell and 't Hart's (2019) conceptualization of non-intervention as situations in which plausible policy measures to address identified problems do not take place.

Figure 2.6 illustrates how non-adoption is defined as policy inaction in the context of local climate policy. When a city experiences climate disasters and public concern for climate change is high, problem salience triggers issue mobilization, at which point the city must decide how to respond. The city has two possible choices: initiate a formal climate action planning process, which can result in either adoption or adoption still in progress (yet-adoption), or forgo planning entirely, resulting in non-adoption. It is this latter outcome that this dissertation treats as a form of local climate policy inaction. Following, the Possibility Principle, exhibiting issue mobilization establishes non-adoption cases' adoption as a realistic political option. These cases meet the negation criteria for case selection. When problem salience is absent, non-adoption is the logical outcome. Empirically, this form of inaction is observable through the absence of formal policy documents, such as Climate Action Plans, through which cities typically articulate climate goals, specify policy measures, and establish evaluation metrics (Stokes &

Breetz, 2020). The dashed lines in Figure 2.6 denote the inaction process, distinguishing it from the active policymaking process represented by solid lines.

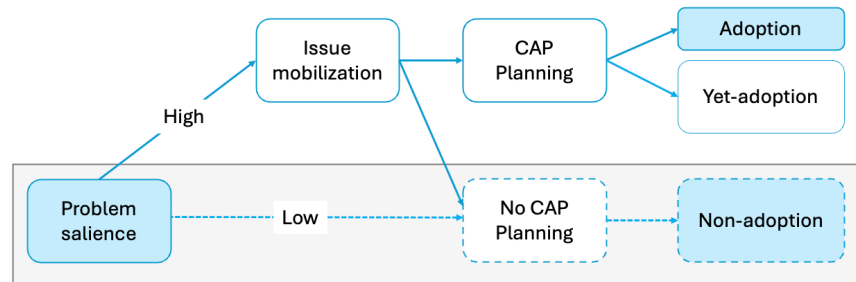


Figure 2.6 Defining non-adoption for the dissertation

2.4.2 Framing Non-adoption

Existing theories of climate policy inaction typically explain non-intervention decisions based on factors, such as climate denial of actors, misuse of discretion (e.g., evading risk assessment to avoid responsibility), lack of political leadership, or limited administrative capacity (Birchall & Kehler, 2023; Moser & Ekstrom, 2010). Drawing on the typologies of inaction categorized by McConnell and 't Hart (2019), this section extends their framework by identifying the observable configurations through which imposed, calculated, ideological, and reluctant inaction arise in multilevel governance systems. In doing so, this study treats policy inaction not as a residual category, but as an analytically meaningful outcome produced by distinct causal mechanisms.

2.4.2.1 Problem salience

A decision concerning the public constitutes “a choice among alternative lines of action directed at affecting community-wide institutions” (Rossi, 1967, p. 416). In democratic societies, such consequential decisions are expected to be grounded in credible scientific evidence, sound political judgment, and professional practices (Koliba, 2025). Although scientific consensus on anthropogenic climate change is robust, its interpretation and use in policymaking have become deeply politicized, with climate denial and misinformation obscuring both political and professional judgment (Birchall & Kehler, 2023; Catney & Henneberry, 2012; Guber et al., 2021). Yet, the actual impacts of climate change at the local level continue to intensify, necessitating governmental intervention (Birkland, 2006; Giordono et al., 2020).

Within this context, local climate policy inaction may be justified when climate risks to the locality are not understood as sufficiently salient, immediate, or self-evident to warrant municipal intervention, even though all regions across the U.S. experienced overall increases in extreme precipitation and extreme heat events in the early 21st century (Janssen et al., 2014; Stephens et al., 2024). When local decision-makers consider that climate impacts do not pose significant threats to their jurisdictions, choosing not to act can be seen as a rational response to competing priorities. In this sense, low climate risk may serve as a prerequisite condition for inaction. However, the complexity of climate issues means that local climate policy decisions are shaped not only by problem severity but also by institutional, political, and economic logics of action, which may override problem salience (Friedländer, 2025). Consequently, if low

climate risk is not a necessary condition for local climate policy inaction, the decision may instead reflect constraints on municipal governments' ability to acquire and deploy legal, political, and administrative power.

2.4.2.2 Intergovernmental power

When the literature on local climate policy adoption examines barriers to action, studies most often focus on deficits in political leadership, administrative capacity, and institutional resources that enable or limit municipal ability to undertake climate initiatives (Krause, Yi, et al., 2016; Massey et al., 2014; Moser & Ekstrom, 2010). Far less attention has been devoted to the legal constraints that municipalities may encounter when attempting to enact local policies (Amsler & Vieilledent, 2021), particularly how such constraints operate as mechanisms of power rather than mere institutional limitations on local climate actions.

As Bachrach and Baratz (1963) argue, decision-making forces are fundamentally relational—they cannot be exercised in isolation but rather depend on the “relative importance of conflicting values *in the mind of the recipient* in the power relationship” (Bachrach & Baratz, 1963, p. 633, emphasis in the original). Since local governments are “creatures of the state,” they occupy a structurally subordinate position (Frug, 1984), which allows states to exercise the preemption doctrine to impose state-wide policy uniformity and reduce their local governments' authority in addressing local problems. For example, environmental preemption can profoundly shape decisions toward climate inaction by legally prohibiting local governments from taking individual environmental actions, such as banning single-use plastics or adopting ordinances limiting local utility

connections in fossil fuel use (Haddow, 2021). When action on local climate issues is not feasible due to an exercise of *power* through which high-level governments constrain local policy options by threatening noncompliance, it exemplifies McConnell and 't Hart's (2019) "imposed inaction."

States have threatened local governments and their officials with funding cuts, potential criminal liability, and removal from office as a penalty for noncompliance (Briffault, 2018; Briffault et al., 2023). In such situations, the local government chooses compliance not because the demand aligns with its values, but because the value sacrifice required by compliance is perceived as the lesser of two evils when weighed against potential punishment (Bachrach & Baratz, 1963). This 'chilling effect' of state preemption has been reported to force local officials to abandon or delay policymaking efforts (Rutkow et al., 2019).

Inaction may also reflect what McConnell and 't Hart (2019) term "calculated inaction," in which local governments strategically weigh the benefits of inaction against the costs of compromising other goals and tactically opt for non-intervention (McConnell & 't Hart, 2019). This dynamic can be particularly evident when states that preempt local environmental action have also adopted state-level climate action plans. In such cases, local governments can infer that state preemption poses little or no threat of sanctions for noncompliance. These mixed signals lead local governments to interpret state preemption as an assertion of *authority* rather than an exercise of power carrying real sanctioning consequences (Bachrach & Baratz, 1963). Under such conditions, local governments may view state leadership on climate change as relieving them of responsibility for

independent action, rendering inaction on local climate policy a strategically defensible response (Hultquist et al., 2017).

Unlike imposed or calculated inactions, compliance can occur not because of coercion or tactical decision-making, but because the recipient is *influenced* and shares value, preferences, or political commitments with the actor issuing the demand (Bachrach & Baratz, 1963). Local climate policy inaction driven by this value alignment and shared political convictions corresponds to what McConnell and 't Hart (2019) describe as “ideological inaction.” Scholars found that state preemption laws reflect the partisanship and ideology of state officials (Einstein & Glick, 2017; Goodman et al., 2021; Goodman & Hatch, 2024), and Republican governors are more likely than Democratic governors to enact preemption laws that constrain local climate policies (Amsler & Vieilledent, 2021). Partisan mismatch, especially when cities led by progressive Democrats within states led by conservative Republicans, is likely to create conflicts between state and local governments (Berman, 2020). Under conditions of partisan match, such as when both the governor and mayor are Republicans, local officials may be more inclined to abide by state preemption and to refrain from pursuing independent local policies (Artiles, 2026).

Climate policy inaction may also result from limited economic resources or technical expertise, regardless of the level of climate risks (Massey et al., 2014; Moser & Ekstrom, 2010). When local governments recognize the importance of climate action but perceive themselves as lacking the fiscal, organizational, or professional capacity necessary to design and adopt formal climate policies, “reluctant inaction” occurs, reflecting constraint-driven non-intervention (McConnell & 't Hart, 2019).

Local governments' primary revenue source is the property tax, which is closely linked with population growth (Alm et al., 2011). As larger cities tend to have broader tax bases, greater revenue-generating potential, and more specialized administrative structures to support complex policy initiatives (Hawkins et al., 2016; Krause, Feiock, et al., 2016), city population size is commonly used as a proxy for fiscal and economic capacity (Krause, 2011; X. Wang et al., 2012). Smaller municipalities, by contrast, often face budgetary constraints and limited staff capacity, increasing the likelihood of inaction to address climate risks (Homsy & Warner, 2015).

The last policy inaction types of McConnell and 't Hart (2019) include inadvertent inaction, which describes situations in which decision-makers face cognitive challenges in processing vast, complex information, thereby downplaying the importance of a particular public problem. Since this type is not predicated on power dynamics among actors but rather operates in the cognitive space of individual decision-makers, it falls outside of the scope of this dissertation.

2.4.3 Local Policy Non-adoption Framework

Table 2.3 summarizes each inaction type defined by its decision-making mechanisms activated by power relations, along with the observable conditions under which each type is most likely to occur. Local climate policy inaction may result not from low problem salience alone, but from intergovernmental, political, and resource constraints that shape the costs of action faced by local governments. When these legal, political, or administrative costs exceed what local governments are willing or able to bear, inaction becomes the likely outcome. How local governments weigh the value of

climate resilience against competing priorities and external pressures from states determines which decision-making mechanism is activated, giving rise to distinct types of policy inaction.

Table 2.3 Decision mechanisms and typologies of local climate policy inaction

Inaction Type	Decision Mechanism	Force	Operationalization in the Climate Policy Context
Imposed	Value foreclosure through coercion	Power	State preemption
Calculated	Value justification through strategic compliance	Authority	State preemption and state climate leadership
Ideological	Value alignment	Influence	Partisan match between governor and mayor
Reluctant	Resource constraints	Resource	Small city size
Inadvertent	Blind spot due to information overload		

Note. The inaction type and decision mechanism are drawn from McConnell & 't Hart (2019). Three forces (power, authority, and influence) are inferred from Bachrach & Baratz (1963). The remaining cells are developed by this dissertation.

2.5 Summary

The aim of this dissertation is to explain why some local governments adopt climate policies while others remain inactive, even when they face similar environmental and institutional conditions. Despite the shared urgency to adapt to climate impacts, policy adoption remains uneven. Prior public administration scholarship identifies factors associated with local climate policy adoption, including public support, administrative

capacity, and climate risks (Yeganeh et al., 2020). However, the literature leaves three gaps.

First, it fails to establish whether high public support is a necessary condition for adoption. If cities require high public support to adopt climate policy, does that mean cities cannot adopt climate policy in the absence of public support, even when climate risk is high? Second, this literature has been less attentive to American intergovernmental relations and the role of state government's policy directives in shaping local climate policy outcomes. Local governments operate within complex institutional environments in which legal, political, and administrative factors interact in patterned ways that vary across place and time. Yet how to incorporate this institutional complexity into our understanding of local climate policy adoption remains undertheorized. Lastly, it remains unclear whether policy inaction can be explained by simply inverting the logic of policy adoption: that is, whether the conditions that promote action also account for its absence. Is this a reasonable assumption to make? If not, both practitioners in under-resourced cities and climate policy researchers have a stake in understanding what actually explains non-adoption.

The theoretical perspectives synthesized in this chapter provide the conceptual foundation for the empirical analyses that follow. Importantly, what cities do cannot be isolated from the larger state institutional environment. The question of why local governments do not act requires a separate analysis. The next chapter builds on this foundation to systematically examine how cities facing similar legal constraints

nonetheless exhibit divergent responses to multilevel governance environments characterized by uneven authority and contested power.

3 RESEARCH METHOD AND DESIGN

This dissertation employs Qualitative Comparative Analysis (QCA) to analyze patterns of climate policy adoption and non-adoption among municipalities in the United States. As an appropriate method for medium-N case studies (e.g., 20-50 cases), QCA use has been suggested by multilevel climate governance literature (Kemmerzell, 2018; van Der Heijden, 2019), but its effective use in the field remains scarce. On the other hand, the method has been utilized in public administration and policy research as it is a suitable theoretical and methodological approach for theory development (Y. Kim & Verweij, 2016; Raab et al., 2015; C. Wang et al., 2024). This chapter elaborates key components of the research method and explain research design for this dissertation.

3.1 Qualitative Competitive Analysis

QCA is a set-theoretic method that can identify specific relationships (e.g., necessary, sufficient) between conditions (Schneider & Wagemann, 2012). The set (or concept) refers to the well-determined collection of cases, which are the observations to conduct an inquiry. Concepts as sets is defined not as a property or a group of properties, but in terms of “boundaries that define zones of inclusion and exclusion” (Mohoney 2010: 7, cited in Schneider & Wagemann, 2012). Sets are data containers, which uses set membership to define whether a case can be described by a concept or not. For example, the set of European Countries (EU) includes 27 member countries that are primarily located in Europe as of April 2026.

Some concepts are challenging to define set membership. For example, poverty is a concept that shows the state of lacking sufficient resources to meet basic needs. For empirical studies, poverty has been operationalized and measured through household income below the federal poverty line, percentage of people receiving government benefits (e.g., SNAP), percent of income spent on rent, etc., depending upon study topics. These are measurable variables, which a variable alone or variables together can be a proxy of the concept, poverty. QCA research has used a single variable or a set of multiple variables to represent a condition.

3.1.1 Membership

The set relations between conditions depend on the membership of cases in each set. In QCA, qualitative differences among study cases determine inclusion and exclusion of a set, and the anchors that mark those qualitative boundaries must be grounded in theory and substantive knowledge. However, even with a well-defined concept, drawing a defensible qualitative boundary between full inclusion and full exclusion is not always straightforward. The difficulty varies by the nature of the underlying social condition. For illustrative purposes, I compare three scenarios.

First, membership assignment is relatively straightforward when the social condition is relatively dichotomous. For example, a city's membership in a set of Democratic mayoral leadership depends on the qualitative boundary defined by the binary property itself: a city either has a mayor whose party is Democrat, or it does not. Binary logic dictates full inclusion and full exclusion, and no additional theoretical judgment is required to determine the cutoff. When the underlying nature of a concept

can be considered dichotomous, calibration for membership assignment becomes binary, making the set appropriate for crisp set QCA.

Many social conditions, however, do not have a naturally dichotomous structure. Defining social concepts involves an inherent conceptual indeterminacy that invites theoretical disputes over qualitative boundaries, producing a range of defensible calibration thresholds rather than a single cutoff (Schneider & Wagemann, 2012). Consider climate risk. While it may seem straightforward to identify cities with extreme heat exposure (e.g., Phoenix, AZ) or flooding vulnerability (e.g., Virginia Beach, VA) as cases of high climate risk, delineating a clear boundary between high- and low-risk cities requires considerable theoretical judgment. Climate risk, as operationalized in this dissertation, encompasses both actual and perceived risks. Actual risk alone can be captured through multiple measures, such as loss of life, property damage, and the frequency of extreme weather events (Brody et al., 2008; Giordono et al., 2020; J. Kim, 2025). Each of these measures suggests different thresholds. Moreover, the qualitative significance of a threshold is debatable: whether a city that experienced one fatality belongs to the same set as one that experienced 100 is a theoretical question about how we value human loss and how that valuation translates into meaningful qualitative differences.

To account for such inherently imprecise conceptual boundaries, QCA scholars developed fuzzy sets, which allow cases to be calibrated against three theoretically grounded anchors, yielding partial membership values between 0 (full non-membership) and 1 (full membership), with the crossover point at 0.5 (Schneider & Wagemann, 2012).

Determining where the crossover point lies is crucial for assigning fuzzy scores. A score of 0.5 does not indicate that a case has a medium level of climate risk in a quantitative sense; it designates the point as neither in nor out of a set. For this reason, assigning a case at the crossover point should be avoided (Schneider & Wagemann, 2012).

While fuzzy sets allow capturing gradations among cases more than crisp sets do, both set types require establishing a theoretically defensible cutoff that differentiates inclusion and exclusion of set membership. The choice of calibration forms, therefore, should justify the need for quantitative interpretation between varying degrees within the qualitatively same dimensions of a concept (e.g., more in versus fully in). For example, variation in the amount of existing neighborhood green spaces—scarce (full exclusion), minimum (partial exclusion), moderate (partial inclusion), and abundant (full inclusion)—may capture nuanced differences in how the existing richness of the natural environment shapes gentrification, where degrees of green presence carry substantive theoretical meaning (J. Kim et al., 2025).² The decision between crisp and fuzzy sets should be driven by whether conceptual gradations within the concept provide meaningful interpretation rather than measurement convenience.

Lastly, a social condition can be categorically distinctive. These conditions are neither binary nor vary by degree but rather consist of theoretically meaningful distinctions. Consider the dyadic type of gubernatorial and mayoral party affiliations. Four combinations are possible: Republican governor with Republican mayor,

² Another example provided Ragin (2008) is water temperature: 95 and 105 degrees Celsius demarcate a qualitative difference in the physical state of water (liquid versus vapor), whereas 30 and 40 degrees Celsius do not (Schneider & Wagemann, 2012).

Republican governor with Democrat mayor, Democrat governor with Republican mayor, Democrat governor with Democrat mayor. The multi-categorical nature of a social condition forms a multi-value set in QCA, assigning each case a discrete value corresponding to its qualitative category. Crucially, these values differ from those on the ordinal scale used in Likert-style measurement. Unlike crisp and fuzzy sets, multi-value sets do not include a qualitative anchor to distinguish inclusion from exclusion.

Calibrating set membership necessarily involves translating theoretical judgments into numerical values. While the justification for each qualitative anchor must be grounded in theory and substantive knowledge of the concept, there are cases in which the existing literature does not provide sufficient guidance on where a defensible threshold lies. Consider public support for carbon-emission regulations. The literature does not offer a clear answer to what percentage of a city's population must favor such a policy for the city to qualify as having "high" public support. The appropriate threshold may reasonably vary by cultural and political context. In such a case, the empirical distribution of the data can provide a practical starting point, using clustering techniques to identify empirical breaks in the distribution that correspond to meaningful groupings in the data (Duşa, 2018). The boundary acquired by clustering should support a substantive interpretation and can inform theoretical grounds with qualitatively meaningful differences in the concept.

Since thresholds determine the inclusion and exclusion of cases in sets and, therefore, directly shape QCA results, scholars debated whether varying the location of cutoff points would substantially alter the conclusions. Threshold sensitivity analysis

addresses this by systematically varying calibration anchors within a theoretically plausible range and assessing whether the Boolean expressions of the solution terms remain unaltered. When qualitative anchors are carefully selected using transparent and plausible criteria, the range of defensible thresholds is often narrow, and minor variations in membership scores rarely lead to fundamentally different conclusions (Schneider & Wagemann, 2012; Skaaning, 2011).

3.1.2 Set Relations

QCA examines whether a single (or combinations of) condition(s) (i.e., *configurations*) are necessary or sufficient for an outcome condition (e.g., climate policy adoption) by systematically comparing study cases (Schneider & Wagemann, 2012). In QCA, conjunction, represented by the logical AND (also represented as *), refers to the combination of two or more conditions that must be present together to produce or explain an outcome. For example, public support AND climate risk (public support*climate risk) may together produce local climate policy adoption. By contrast, disjunction represents the logical OR relationship (denoted as +), in which the outcome can be produced by either configuration. (Public support AND high climate risk) OR (lack of public support AND administrative capacity) can equally explain the outcome condition. Multiple pathways are conceptualized using logical OR. QCA also uses upper case for the presence of a condition (e.g., PS) and lower case for the absence of a condition (e.g., ps).

3.1.2.1 Necessity analysis

Necessity has a unique causal quality: if a condition is absent, the outcome does not occur; when the outcome occurs, the condition is always present. For example, oxygen is necessary to make fire—without it, fire is impossible, yet the presence of oxygen does not automatically produce fire. If we denote oxygen as explanatory set X and fire as outcome set Y , then X is a necessary but not sufficient condition for Y , making X a superset of Y (see Figure 3.1(a)).

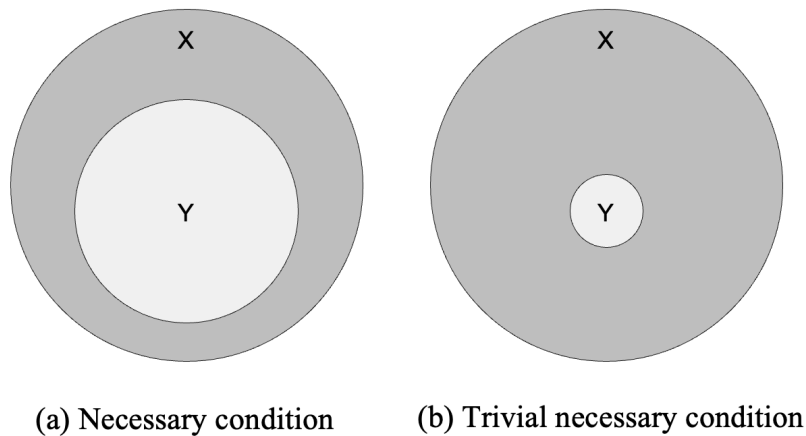


Figure 3.1 Types of necessary condition

Necessity relation is expressed as follows:

Logical statement: If Y , then X (or “No X , no Y ”)

Set theory: $Y \subseteq X$

QCA notation: $Y \rightarrow X$

Unlike physical properties, social phenomena rarely hinge on a single condition, making strict patterns of necessity difficult to identify. Nonetheless, the literature has made progress in assessing necessity through descriptive measures of consistency, relevance, and coverage, helping to relax the strict boundaries of necessary conditions (Ragin, 2006; Schneider & Wagemann, 2012).

The consistency score measures how well the empirical data support the proposed set relation between a condition (or configuration) and an outcome (Schneider & Wagemann, 2012). In set-theoretic terms, consistency score of necessary relations reflects whether the explanatory condition is the superset of the outcome condition. For example, if 32 out of 37 cities that adopted climate policy also have Democratic mayoral leadership, the consistency score is 0.865. A perfect consistency score is 1.0, and the conventional consistency threshold for a necessity condition is above 0.9 (Rohlfing & Schneider, 2013). Therefore, Democratic mayoral leadership falls short to be a superset of the policy adoption outcome. The consistency score of a necessary condition is calculated using the following formula:

$$Consistency_{(y \subseteq x)} = \frac{\sum_{i=1}^I \min(X_i, Y_i)}{\sum_{i=1}^I Y_i}$$

Two or more conditions forming a disjunction can also be necessary when they theoretically constitute a higher-order condition (Schneider, 2019). For example, governmental sustainability office OR fiscal capacity, or both, can be conceptualized as functionally equivalent expressions of a single broader concept, such as administrative capacity. When the consistency score of such a disjunction exceeds 0.9, a higher-order

condition can be hypothesized as necessary (Rohlfing & Schneider, 2013; Schneider, 2019). It is more common for disjunctions to be candidates for necessity than conjunctions because disjunctions are larger sets that can more readily encompass the outcome.

Not all disjunctions that exceed the conventional consistency threshold constitute meaningful necessary conditions. Once consistency is established, identifying a necessary condition requires additional evaluation of empirical coverage, relevance, and theoretical interpretation (Ragin, 2006; Schneider, 2019; Schneider & Wagemann, 2012).

Coverage measures how small the outcome set Y is relative to the necessary explanatory set X (Schneider & Wagemann, 2012). Returning to the oxygen and fire example, while oxygen is necessary to ignite and maintain fire, it does not automatically produce fire. Coverage captures how much of the fire occurrence is explained by the presence of oxygen within a given empirical observation. As the number of cases in outcome set Y (fire) increases, the difference in size between explanatory set X (oxygen) and the outcome set Y diminishes, indicating high coverage. The coverage score of a necessary condition is calculated as:

$$Coverage_{(Y \subseteq X)} = \frac{\sum_{i=1}^I \min(X_i, Y_i)}{\sum_{i=1}^I X_i}$$

Scholars studying the analysis of necessity have differentiated the concepts of coverage and relevance, noting that coverage alone does not fully capture the “trivialness” of a necessary condition—since passing the consistency test for a necessary condition indicates, by definition, that superset X fully covers set Y (Duşa, 2018;

Schneider & Wagemann, 2012). In the oxygen and fire example, oxygen is present even in the absence of fire, meaning the probability of fire occurring solely because oxygen is present is near zero. Such a case renders X (oxygen) a trivial necessary condition. Therefore, testing necessity also requires measuring relevance, which accounts for the presence of X in cases where the outcome Y is absent. This relationship is illustrated in Figure 3.1(b), where a large explanatory set X relative to a small outcome set Y results in low relevance. The relevance score of a necessary condition is calculated as:

$$Relevance_{(Y \subseteq X)} = \frac{\sum_{i=1}^I (1 - X_i)}{\sum_{i=1}^I (1 - \min(X_i, Y_i))}$$

The conventional threshold for relevance is 0.6, while a score of 0.5 is considered modestly trivial (Duşa, 2018). While these rule-of-thumb serve as good empirical guidelines for determining whether a condition is necessary, necessary conditions must also be evaluated on theoretical grounds (Mahoney et al., 2009).

3.1.2.2 Sufficiency analysis

A condition is *sufficient* when it is present for the outcome to occur; however, even if the condition is absent, the outcome can still occur (see Figure 3.2).

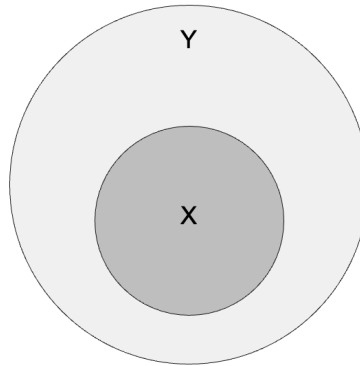


Figure 3.2 Sufficiency condition

Sufficiency relation is expressed as follows:

Logical statement: If X, then Y

Set theory: $X \subseteq Y$

QCA notation: $Y \leftarrow X$

In empirical studies, we rarely find a single condition that is sufficient on its own. We find combination, which is known as INUS condition: an **I**nsufficient but **N**ecessary part of a condition which is itself **U**nnecessary but **S**ufficient for the outcome condition. To have the outcome of fire (Y), we generally need a combination of conditions (e.g., A: Oxygen, B: a match, and C: dry leaves in Table 3.1). Oxygen (A) by itself cannot start a fire (**I**nsufficient). While Oxygen alone is not enough, the combination (A*B*C) is sufficient, and Oxygen is an essential, necessary ingredient. Without the Oxygen, the combination fails (**N**ecessary). However, the combination (A*B*C) is not the only way to start a fire. Other combination such as a short circuit (D) and a gas leak (E) can also start

a fire. Therefore, the (A*B*C) path is Unnecessary. If (A*B*C) exists together, a fire will start (Sufficient).

Table 3.1 Example of fire and associated conditions

“Recipe”			
Path 1	Oxygen (A)	Match (B)	Dry Leaves (C)
Path 2	Oxygen (A)	Short Circuit (D)	Gas Leak (E)

This can be expressed as a Boolean equation:

$$Y \leftarrow (A * B * C) + (A * D * E) \text{ or}$$

$$Y \leftarrow A(B * C + D * E)$$

Oxygen (A) is a Necessary condition (“bottleneck”). A match (B) is a classic INUS condition. It isn’t necessary for all fires (Path 2 doesn’t need it), and it isn’t sufficient on its own, but it is a vital part of the first path. Paths (B*C) and (D*E) are two different sufficient conditions that both require Oxygen (A) to function.

The consistency score of sufficiency relations indicates the degree to which the empirical data are consistent with the postulated sufficient relation between the solution path and the outcome. In set-theoretic terms, consistency score of sufficiency relations reflects whether the explanatory condition is the subset of the outcome condition. The coverage score of sufficiency relations measures how much of the outcome is covered by

explanatory condition or identified sufficient solution paths (Schneider and Wagemann 2012). To evaluate sufficiency, QCA also use consistency and coverage:

$$Consistency_{(x \subseteq y)} = \frac{\sum_{i=1}^I \min(X_i, Y_i)}{\sum_{i=1}^I X_i}$$

$$Coverage_{(x \subseteq y)} = \frac{\sum_{i=1}^I \min(X_i, Y_i)}{\sum_{i=1}^I Y_i}$$

3.1.3 Asymmetry

QCA does not assume that a single independent factor can sufficiently explain an outcome condition. The same outcome can be explained by multiple configurations, reflecting the principle of *equifinality*. This is closely linked to *conjunctural causation*, in which multiple conditions are combined to produce the outcome (Mahoney & Goertz, 2006). Therefore, QCA identifies multiple conjunctural paths that can produce the same outcome.

One important yet underexplored assumption in QCA is asymmetry. In conventional statistical analyses, explaining high values of a dependent variable (Y) automatically entails explaining its low values ($\sim Y$): no separate analysis is required. Similarly, if we know how a variable X contributes to Y, we can infer that $\sim X$ plays the inverse role. This is the principle of symmetry that underlies traditional statistical analysis. QCA, by contrast, assumes that the presence and absence of an outcome are not necessarily symmetric, nor are the set-theoretic relationships between explanatory conditions and the outcome. In other words, different sides of an outcome may demand different explanations. For instance, the factors that explain the adoption of a local

climate policy cannot simply be assumed to explain its non-adoption. Each may require a distinct set of explanatory conditions or combinations.

Symmetric results in QCA arise only in the rare case where the outcome and the solution set perfectly overlap (Schneider and Wagemann, 2012). When a truth table is fully specified, meaning every theoretically possible combination of conditions is represented by empirical cases, De Morgan's Law³ can be applied not only to negate sets but also across subsequent analytical steps. However, because a fully specified truth table is rare, QCA studies typically analyze the absence of the outcome condition separately, constructing a distinct truth table to identify the conditions that explain the negative outcome condition (e.g., non-adoption).

3.1.4 QCA Steps

Figure 3.3 illustrates the process of QCA as a research method. Steps 1–3 constitute the beginning steps of research: the outcome and explanatory conditions are defined, cases are selected, data are collected, and calibration is performed to assign case membership in each set. These steps are elaborated in Section 3.2 in the context of local climate policy adoption.

Steps 4–5 are analytical exercises to identify necessary conditions and sufficient conditions. Before conducting the sufficiency analysis, a truth table is constructed to organize all empirically observed configurations (Schneider & Wagemann 2012). A truth

³ De Morgan's Law governs the negation of logical statements and rests on two principles: first, every element in the original statement has its truth value flipped; and second, all logical operators are inverted, for instance, OR becomes AND, and vice versa. (Schneider and Wagemann 2012).

table contains rows representing all logically possible unique configurations of conditions (2^k), alongside the empirical cases sharing the same configuration. When the calibrated data included 5 conditions (see Table 3.2), a total of 32 possible configurations (2^5) is produced. For illustrative purposes, Table 3.2 reports the resulting truth table, in which only 4 of these 32 configurations are empirically observed.

Table 3.2 Illustration of a calibrated raw data

ID	Outcome	Oxygen (A)	Match (B)	Dry Leaves (C)	Short Circuit (D)	Gas Leak (E)
1	Fire	Yes	Yes	Yes	No	No
2	No fire	No	Yes	Yes	Yes	No
3	Fire	Yes	Yes	Yes	No	No
4	Fire	Yes	No	No	Yes	Yes
5	Fire	Yes	No	No	Yes	Yes
6	Fire	Yes	Yes	No	No	Yes
7	No fire	Yes	Yes	No	No	Yes

Note: Yes is recoded as 1 and No as 0 for truth table

The raw data in Table 3.2 are transformed into a truth table in Table 3.3. Of these 4 configurations, 2 meet the conventional consistency threshold of 0.750 and are therefore included in the next step: logical minimization.

Table 3.3 Truth table with empirical cases by transforming the raw data table

Oxygen (A)	Match (B)	Dry Leaves (C)	Short Circuit (D)	Gas Leak (E)	Inclusion score	Cases
1	1	1	0	0	1.000	1, 3
1	0	0	1	1	1.000	4, 5
1	1	0	0	1	0.500	6, 7
0	1	1	1	0	0.000	2

Once a truth table is created, QCA uses Boolean minimization to simplify the configurations. This minimization process, known as the “Quine-McCluskey” procedure, seeks to find the simplest possible solution paths leading to an outcome based on the principles of Boolean algebra (Duşa, 2018). The procedure begins by compiling a list of all possible configurations of conditions. It then checks whether pairs among configurations (e.g., $A*B*C + A*b*C$)⁴ differ by only one condition in that the conditions’ presence in a configuration and its absence in another (e.g., $B + b$) can be minimized into a simpler term (e.g., $A*C$). Any configurations that could not be minimized enter the next iteration alongside the newly simplified terms, and the process repeats until no further minimization is possible, yielding the final solution paths.

QCA produces three distinct types of solution paths. How we treat the logical remainders (the logically possible combination of conditions without empirical cases) distinguishes these types of solutions. The conservative solution makes no assumptions about the logical remainders and simplifies based only on empirically observed cases.

⁴ Uppercases denote the presence of a condition, whereas lowercases denote the absence of a condition.

Conservative solutions help perform case-oriented, theory-informed interpretation (Álamos-Concha et al., 2022). This solution is most honest to the data without speculation. The parsimonious solution is the simplest possible path to the outcome. It assumes logical remainders that yield the outcome when doing so helps simplify the final solution. This solution is easy to communicate, but it can include counterfactual cases that are theoretically impossible. The intermediate solution is often recommended because it uses easy counterfactuals—only logical remainders that are consistent with existing theoretical knowledge (directional expectation). The intermediate solution requires explicit theoretical justification for direction.

Steps 6–7 are the process to interpret the results and finalize findings. While the process has been explained linearly in Figure 3.3, QCA heavily relies on iterative processes and feedback from each step.

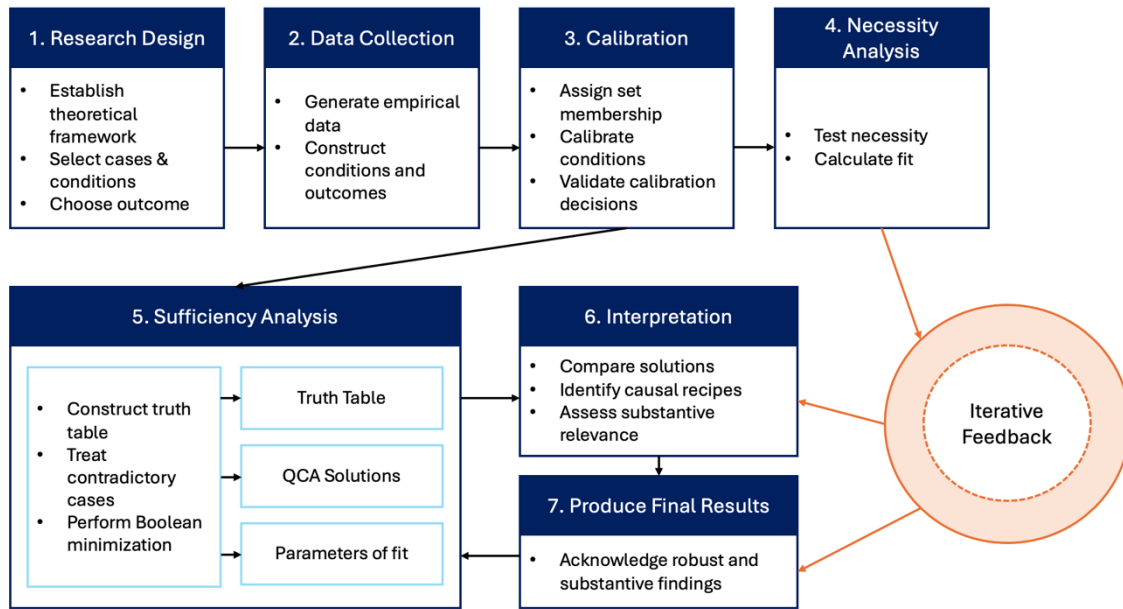


Figure 3.3 QCA process

3.2 Research Design

3.2.1 Case Selection

The largest city in each of the 50 US states is selected as study cases. Using the largest cities as proxies for understanding state-level policy environments is appropriate, as these municipalities are likely to serve as leading examples in their respective states in pursuing ambitious climate policies within potentially restrictive intergovernmental policy environments (Homsy & Warner, 2015). Cities were selected based on 2010 population estimates (U.S. Census, n.d.). The year 2010 is selected because climate action planning became a popular local government activity around 2010 (Bassett & Shandas, 2010). The list of the 50 selected cities and their population sizes is reported in

Appendix A. The selection process identified cities ranging from Burlington, VT (41,935) to New York City, NY (8,078,471).

Figure 3.4 shows cities selected for each of 50 states based on their population size in 2010.

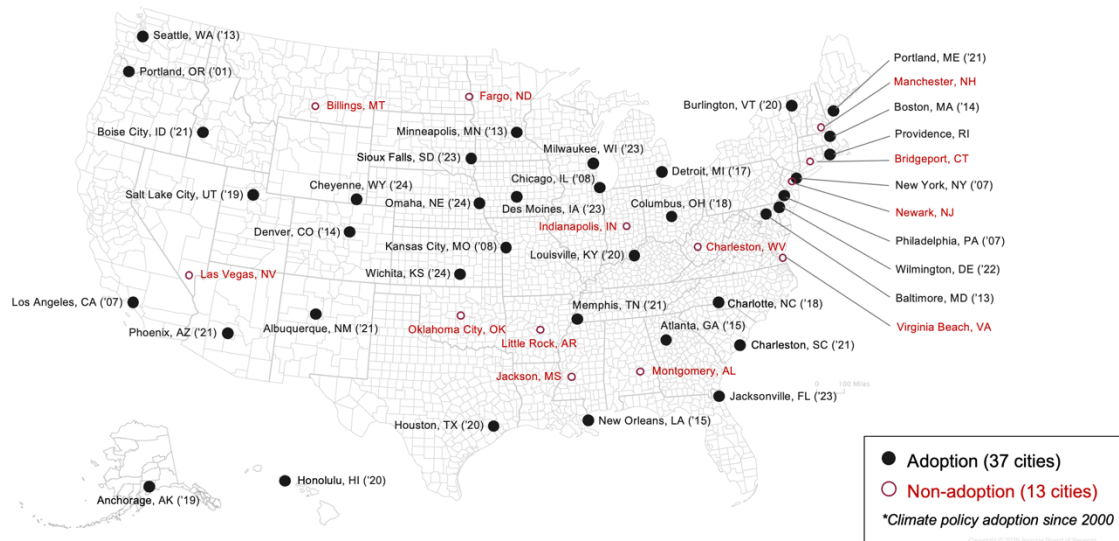


Figure 3.4 Case selection and local climate policy adoption outcomes

Note. Numbers in the parenthesis shows the adoption year of the initial climate plans

3.2.2 Outcome Conditions and Data

This study examines the development of city governments' policy documents that contain local actions to address climate change impacts. Specifically, climate action plans (CAPs), climate adaptation plans (CAAPs), and resilience plans (RES) from 50 U.S. cities are collected. Local governments release CAPs or CAAPs to specifically address

climate risks, such as extreme heat waves and sea-level rise (Lyles et al., 2018). CAPs may seem to differ from CAAPs in their main purpose: CAPs tend to focus on actions to reduce carbon emissions, whereas CAAPs outline actions to manage climate change impacts. However, climate actions in both plans are not mutually exclusive, especially when using nature-based solutions, which are effective measures for both mitigation and adaptation (Kim, 2025). Recently, local governments have increasingly been creating RESs rather than CAAPs to frame their actions as responses to climate risks (Woodruff et al., 2022).

These climate-focused plans differ from other municipal planning documents in important ways (see Figure 3.5). They differ from comprehensive plans, which encompass all aspects of urban systems and hence could lack specific actions to address climate risks (Berke et al., 2015). They also differ from sustainability plans, whose central purpose is to reconcile environmental, economic, and social conflicts in urban planning, rather than to have a particular focus on climate change (Campbell, 2016; Woodruff et al., 2022).

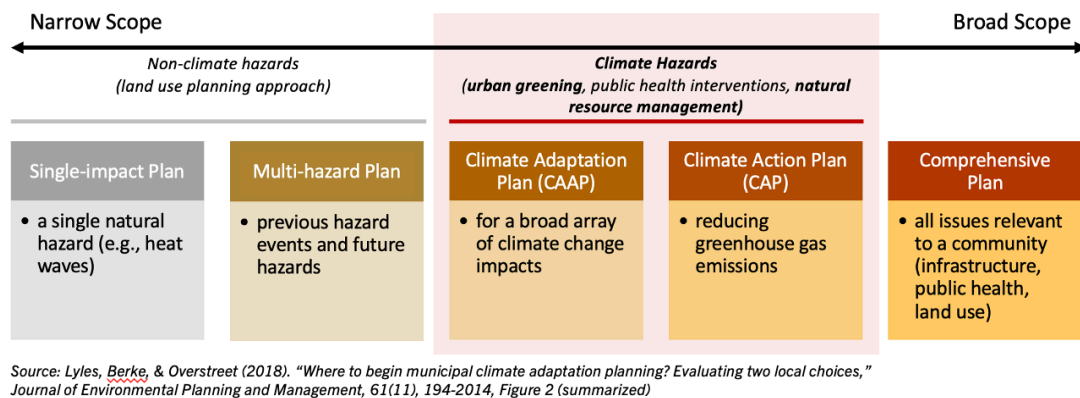


Figure 3.5 Local climate-related plans

Source. Kim, J. (2025). Pathways to Climate Adaptation Policy Adoption by Local Governments. *Public Administrative Review*, 86(2), 326-340.

The primary outcome condition is the adoption of local climate policy, coded as (1) when a city released either a CAP, CAAP, or RES between 2000 and 2024. Each city's local climate plans were collected from the city government's websites and validated through the Georgetown Climate Center's Adaptation Clearinghouse as of April 2025. The earliest year that any type of document was released is considered to construct explanatory conditions. If a city has not released any of the three document types as of April 2025, it is coded as (0) (see Appendix B).

Figure 3.4 also shows that thirty-seven cities adopted local climate policies (black dots) and thirteen cities did not adopt the policies (empty red circles). As of April 2025, none of the non-adoption cities fall into the yet-to-adopt category. Two non-adoption cities (Montgomery, AL, and Bridgeport, CT) kicked off climate planning during 2025. (see Appendix C).

3.2.3 Explanatory Conditions and Data

Since each city released its first policy document at different times, explanatory conditions are constructed using data collected over the 5-year period prior to each city's initial plan document in Figure 3.4. Figure 3.6 presents data collection approach. If city A adopted a climate plan in 2006, explanatory conditions are collected between 2001 and 2005. The logic is the same for city B, which adopted a plan in a different year. For city C, which did not adopt a plan as of April 2025, explanatory conditions are collected between 2020 and 2024.

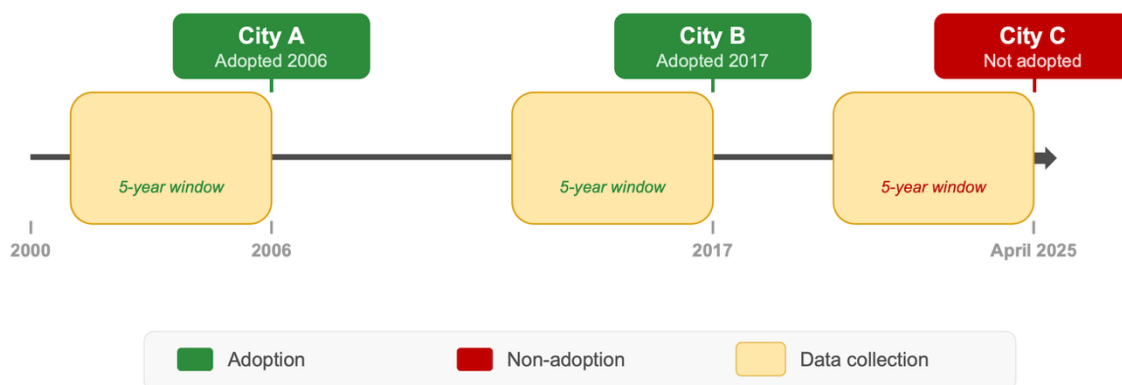


Figure 3.6 Study period and data collection

3.2.3.1 State environmental preemption laws (SP)

State legislation that prohibits the power and discretion of local governments in climate-related actions is retrieved from Vote Smart's "Key Votes" database, state legislation websites, and LegiScan. Key votes include bills that receive media attention and are selected by Vote Smart based on their controversy and importance (Boeckelman

& Day, 2021). Following Boeckelman and Day (2021), bills are identified using issue searches. Haddow (2021) notes that the lobbying efforts by the gas and petroleum industry are evident in the adoption of state preemption laws targeting local bans on natural gas and plastic bags as a means to block or discourage climate actions by local governments. Therefore, after filtering bills categorized as “Federal, State, and Local Relations,” state legislation that prevents local governments from banning natural gas or fossil fuel use, as well as banning plastic bags or containers, is collected.

Table 3.4 shows state environmental preemption laws restricting local bans on utility connections and plastic containers that have been enacted across states during the study period. The information is validated by Walker and Malmuth (2024). A city is coded (1) when its state government enacted state preemption laws before the release of the city’s initial plan; otherwise, it is coded as (0). Eighteen cities are preempted by their respective states, whereas 32 cities are not.

Table 3.4 States that enacted environmental preemption during the study period

Type	States and their enacted environmental preemption bills
Utility connections	Alabama (HB446, 2021), Arizona (HB2686, 2020), Arkansas (SB137, 2021), Florida (SB856, 2021), Iowa (HB166, 2021), Indiana (HB1191, 2021), Kansas (SB24, 2021), Mississippi (HB632, 2021), Montana (SB208, 2023), New Hampshire (SB86, 2021), North Dakota (HB1234, 2023), Oklahoma (SB492, 2020), Tennessee (HB884, 2021), West Virginia (HB2842, 2021), Wyoming (SF0152, 2021)
Plastic containers	Arizona (HB2131, 2016), Arkansas (ACT751, 2021), Florida (HB771, 2019), Idaho (HB372, 2016), Michigan (SB853, 2016), Mississippi (SB2570, 2018), Montana (HB407, 2021), South Carolina (HB3529, 2018), Tennessee (HB1021, 2019)

3.2.3.2 Home rule (HR)

The breadth of home rule that cities can exercise varies by city. It depends on both state constitutional provisions and city-level action and is therefore confirmed through a two-step process. First, a state must grant home rule authority to its municipalities, either through constitutional provisions that are self-executing or that require enabling legislation, or through state legislative statute (Russell & Bostrom, 2016). Second, cities within home-rule-granting states must adopt a city charter to exercise their authority unless home-rule is self-executing. Cities without home rule charters within home rule-granting states are further verified by legal literature and reports from the Local Solutions Support Center (see Appendix D). A city is coded as (1) if it has home rule authority, and (0) otherwise. Forty cities have home rule authority, while 10 cities do not.

3.2.3.3 State climate action plan (SCAP)

States also develop climate action plans.⁵ Statewide climate action plans were collected from the state government websites and validated through the Georgetown Climate Center's Adaptation Clearinghouse as of April 2025. If a city's respective state had released a statewide climate action plan prior to the city's initial plan adoption, it is coded as (1). In cases where a state adopted a climate action plan after its cities, it is coded as (0). The state climate action plan condition is combined with the state environmental preemption condition to create a multi-value condition to capture state-

⁵ Under Section 60114 of the Inflation Reduction Act of 2022, the Climate Pollution Reduction Grants (CPRG) program allocates nearly \$5 billion to states, local governments, tribes, and territories to support the development and implementation of Priority Climate Action Plans (PCAPs). These plans focus on establishing greenhouse gas inventories as a foundation for Comprehensive Climate Action Plans, which encompass broader climate action strategies. The first phase of grants was awarded in 2023. Because this study's adoption timeframe begins from 2000, PCAP falls outside its scope and is not considered.

level climate policy direction in the analysis of local climate policy inaction in Chapter 6. Multi-value conditions are calibrated as: SP only (2), SP *and* SCAP (1), SCAP only, or neither (0).

3.2.3.4 Governor's political affiliation

A city is coded (1) if its state's governor was consistently a Democrat throughout the 5-year window. States whose governors held other party affiliations (Republican, nonpartisan, or Independent) during this period are coded as having no Democrat governor. In four states, Missouri, Montana, Vermont, and Virginia, governorships transitioned from Democrat to Republican within the 5-year window. In such cases, cities are coded as (0), reflecting the assumption that Republican gubernatorial leadership in the later years of the window may have been more influential than Democratic leadership in the earlier years. This condition is then combined with the Democratic mayoral leadership condition to capture partisan alignment between governors and mayors in Chapter 6. Partisan (mis)match between governors and mayors (G-M) represents value conflict or congruence from the perspective of a mayor. Calibrated multi-value condition includes: Republican governor-Republican mayor (2) indicates a match for non-adoption, Republican governor-Democratic mayor or Democratic governor-Republican mayor (1) indicates a mismatch, and Democratic governor-Democratic mayor (0) also indicates a match for adoption.⁶

⁶ Republican mayors are unlikely to face partisan pressure from Democratic governors to refrain from local climate action and therefore are not subject to incentives for climate policy inaction. In the dataset, Las Vegas, Nevada is the only city that falls under this condition.

3.2.3.5 Public support (PS) for climate policy

High public support for climate policy among citizens is calibrated using the estimated percentage of the population that supports regulating CO₂ as a pollutant, reported in the Yale Project on Climate Change Communication's annual county-level survey data from 2013 to 2021 (Howe et al., 2015). To compare cities across different years, z-scores were calculated using the mean and standard deviation of each respective year. See Appendix E for the mean and standard deviation of the measure each year.

Figure 3.7 shows the distribution of cities based on their z-scores (see Appendix F). Cities with z-scores greater than 2 (more than 2 standard deviations above the mean of the public support measure in the year examined) were assigned full membership in the high public support set. 15 cities were assigned high public support (1); the remaining 21 cities were assigned low public support (0). Later, the sensitivity of the threshold decision is examined by relaxing z-score to be greater than 1.4 (the red vertical line in Figure 3.7) for the membership of high public support in Chapter 4.

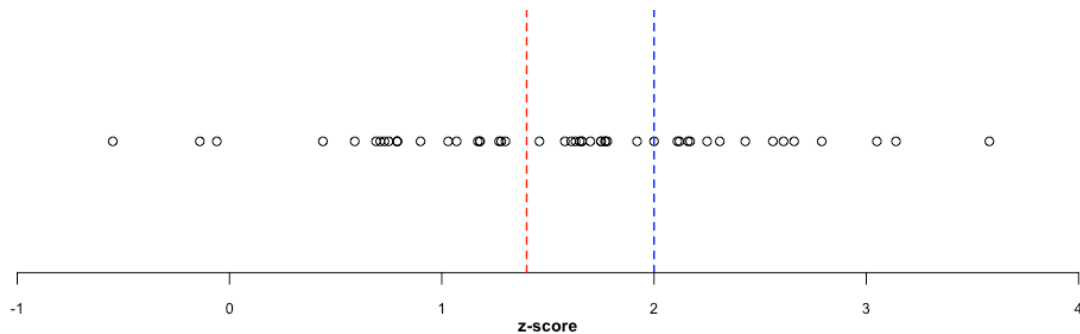


Figure 3.7 High public support condition

Note. The blue vertical line ($z\text{-score} = 2$) marks the threshold between high public support and low public support. The red vertical line indicates an alternative threshold for defining membership in the high public support set. The city at the blue vertical line's $z\text{-score}$ is 1.96, which was excluded for the membership of the condition.

3.2.3.6 Democratic mayoral leadership (DM)

A city is coded as having democratic mayoral leadership (1) if the mayor's party affiliation was consistently Democrat throughout the 5-year period prior to the initial plan release. Cities with mayors from other party affiliations (Republican, nonpartisan, or Independent) during this period were coded as having no Democrat mayor (see Appendix G). This variable captures the political continuity of mayoral leadership during the critical period when the city's climate policy decisions were likely being developed and deliberated. Forty-one cities have Democrat mayoral leadership, while 9 cities do not.

3.2.3.7 Climate risk (CR)

Actual climate risk is measured by a city's exposure (frequency) and vulnerability (intensity) to extreme events. Exposure to extreme events is captured by the accumulated total event days of coastal flooding, flash flooding, flooding, excessive heat, and heat for each city's respective 5-year period, retrieved from the National Oceanic and Atmospheric Administration (NOAA)'s Storm Events Database (Information (NCEI), n.d.-a). Vulnerability is captured if a city experienced billion-dollar disasters, retrieved from the U.S. Billion-Dollar Weather and Climate Disasters (Information (NCEI), n.d.-b). Notably, two cities had billion-dollar disasters—Detroit, MI (Michigan and Northeast flooding in 2014) and Houston, TX (Hurricane Harvey in 2017). A city is coded as

having a high climate risk if it experienced either or both a) total extreme weather events over 50 days, and b) experienced billion-dollar disasters during the 5-year period.

Perceived climate risk relies on two indicators that capture perceived climate risk of American citizens: the estimated percentage of the population who think that global warming is happening and the estimated percentage of the population who think global warming will harm people in the U.S, retrieved from the Yale Project on Climate Change Communication's annual county-level survey data from 2013 to 2021 (Howe et al., 2015)⁷. These perception data were analyzed using *K-means* clustering to identify cities with similar climate risk perceptions. The analysis produced four clusters, with 14 cities in the green cluster (upper-right corner in Figure 3.8) assigned to the high-perceived climate-risk membership.

The final climate risk variable combines both dimensions: 23 cities are coded as having a high climate risk (1) when one or both actual and perceived climate risks are present, and 27 cities are coded as low climate risk (0) when both are absent (see the raw data in Appendix F).

⁷ City-level survey data were not available for the study period; county-level data were therefore used as the closest available geographic proxy.

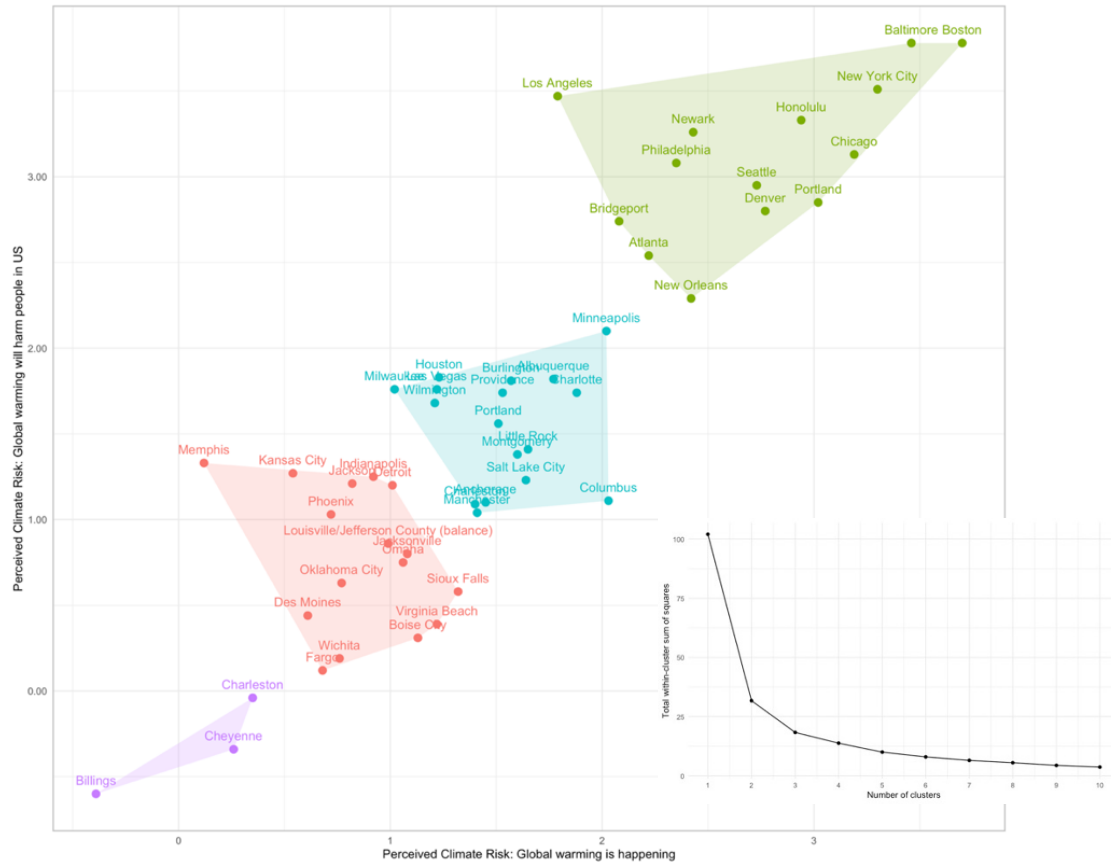


Figure 3.8 Clusters of perceived climate risk

Note. The x-axis and y-axis show the z-scores of the two survey questions from the Yale Project on Climate Change. Four colors represent different clusters of cities identified using the *k-means* clustering technique. Cities in the green cluster are assigned as having high perceived climate risk; otherwise, they are assigned as having low perceived climate risk. *K-means* clustering is calculated using the Euclidean distance formula: $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$, where x is a standardized perceived climate risk on global warming is happening, and y is a standardized perceived climate risk on global warming will harm people in the U.S.

3.2.3.8 Government sustainability capacity (SUS)

Government capacity for climate policy and planning is captured by the presence of organizations (e.g., departments, offices, or commissions) or chief personnel (e.g.,

officers, directors, or managers) related to sustainability and climate resilience. Government websites and local news articles are used to identify the date of establishment or appointment of an organization or chief personnel pertaining to sustainability and climate resilience (e.g., departments, offices, or commissions) or chief personnel (e.g., officers, directors, or managers) related to sustainability and climate resilience. A city is coded as (1) when the city has either established an organization or appointed chief personnel related to sustainability or climate resilience within 5 years before the first release of the plan document; otherwise, the city is coded as (0). Thirty-four cities are identified as having adequate government sustainability capacity, whereas 16 cities are without.

3.2.3.9 Transnational network membership (ICLEI)

Whether cities have transnational network support for local climate actions is captured by cities' membership status in ICLEI (Local Governments for Sustainability). Note that ICLEI membership status was collected as of April 2025, and past membership records are used to verify whether membership was active before the initial plan document of each city. A city is coded as (1) if it has joined and maintained ICLEI membership before the first release of the plan document; otherwise, it is coded as (0). During the study periods, 29 cities had ICLEI membership, whereas 21 did not.

Table 3.5 summarizes the conditions, the indicators used to construct each condition, and the data sources.

Table 3.5 Explanatory conditions, indicators, and data sources

Conditions	Indicators	Data source
State environmental preemption laws	The presence of state preemption on building decarbonization and plastic bag ban (Haddow, 2021; Walker & Malmuth, 2024)	Vote Smart’s “Key Votes,” state legislation websites, LegiScan (Boeckelman & Day, 2021)
Home rule	The status of home rule authority granted by state constitution or legislature or adoption in city charter	State constitution, statutes, or municipal charters
State climate action plan	The adoption of climate action plan by the state government	State government websites and validated by Georgetown Climate Center
Democratic governor	Democratic party governor	Google search
Public support	Public opinion supporting regulation on carbon emission (%)	Yale Project
Democratic mayoral leadership	Democratic party mayor (Gerber 2013)	Google search
Climate risk	Actual risk: Flood deaths (#) (Giordono, Boudet, and Gard-Murray 2020) Perceived risk: Belief that global warming is happening (%) (Roser-Renouf et al. 2014)	National Oceanic and Atmospheric Administration Yale Project
Government capacity (internal)	The appointment of the first Chief Sustainability Officer (CSO) or Chief Resilience Officer (CRO) (Yeganeh, McCoy, and Schenk 2020)	Municipal government websites
Transnational network support	The ICLEI membership (Sharp et al., 2011)	International Council on Local Environmental Initiatives
Small city size	City population estimate in 2010 less than 20,000	5-yr American Community Survey

3.2.4 Analytical Tools

QCA was performed using R (QCA package, SetMethod package). K-means clustering technique was performed using R (X package).

3.3 Summary

Table 3.6 summarizes the level of analysis, focus, outcome, and explanatory conditions examined across Chapters 4–6 for aforementioned outcome conditions. Checkmarks indicate explanatory conditions tested in each chapter. The conditions examined to explain the adoption of local climate policy in Chapter 4 include public support (PS), democratic mayoral leadership (DM), climate risk (CR), government sustainability capacity (SUS), and the transnational network membership (ICLE) as local-level factors. In Chapter 5, state environmental preemption laws (SP) and home rule (HR) are included as vertical multilevel governance factors. The public support (PS) condition is excluded based on the findings of Chapter 4.

The table also includes four non-adoption conditions to be examined in Chapter 6: climate risk (CR) and small cities based on population size (SM). A plus sign indicates that a condition was constructed by assessing both the explanatory condition and an additional factor introduced for non-adoption. For example, one condition examined in Chapter 6 is the alignment of political affiliation between the city mayor and the state governor. Another condition is constructed by combining the presence of state

environmental preemption laws with the availability of a state-level climate action plan.

These two conditions are vertical multilevel governance conditions to explain local climate policy non-adoption.

Table 3.6 Summary of conditions for Chapters 4-6

	Chapter 4	Chapter 5	Chapter 6
Level	Local level analysis	Multilevel analysis	
Outcome	Local Climate Plan Adoption	Local Climate Plan Adoption	Local Climate Plan Non-adoption
Climate risk	√	√	√
Public support	√		
Democrat mayor	√	√	+ Democratic governor
Government Internal capacity	√	√	
ICLEI	√	√	
State environmental preemption laws		+ Home rule	+ State climate action plan
Small city (based on population)			√

4 LOCAL CLIMATE POLICY ADOPTION

4.1 Overview

Decisions to adopt climate policies do not rely on a single independent driver. Yet our understanding of local climate policy adoption is largely based on methodological approaches that identify statistically significant factors while holding other things constant. This chapter reflects the causal complexity of local climate governance, demonstrating that policy adoption emerges from multiple, conjunctural conditions.

Chapter 2 reviewed a broad body of literature on local climate policy adoption, identifying public support, Democratic leadership, climate risk, and government capacity as key factors. In particular, Yeganeh and colleagues' meta-analysis (2020) found that public support—the local citizens' collective attitudes and behaviors toward policies that impact the environment—is the most significant driver of local climate policy adoption. This chapter investigates how political, administrative, and environmental conditions shape cities' adoption decisions together. Specifically, this chapter asks: 1) Is high public support a prerequisite for local climate policy adoption? 2) If not, how do various local conditions combine to produce policy adoption?

This chapter proceeds as follows. I first present the necessary analysis to answer the first research question, then the sufficiency analysis to answer the second research question, and finally a summary of the interpretation of solutions. By establishing these local-level pathways, Chapter 4 serves as the baseline model and provides the foundation for the multilevel institutional analyses that follow in Chapters 5 and 6. The broader implications of the findings will be discussed in Chapter 7, along with the implications of

Chapters 5 and 6, in light of the literature reviewed in Chapter 2 and their practical implications for climate governance in U.S. cities.

4.2 Public Support is Not a Necessity Condition

The necessary analysis result in Table 4.1 did not identify any single condition or combination of conditions as necessary for local climate policy adoption. However, the result shows two important findings. First, none of the explanatory conditions or disjunctions meet the conventional threshold of 0.9 for consistency and 0.6 for relevance (Duşa, 2018, p.123). As reported in Table 4.1, Democratic mayoral leadership (DM) is close but falls below thresholds as a single condition for necessity. Three disjunctions exceed the 0.9 consistency threshold; however, their relevance scores all fall below 0.6.

Table 4.1 Necessary analysis

		Consistency	Relevance	Coverage
1	DM	0.865	0.500	0.780
2	ps + SUS	0.919	0.188	0.723
3	CR + SUS	0.919	0.500	0.810
4	SUS + iclei	0.919	0.312	0.756

Note. Disjunctions of two conditions that have above 0.9 consistency score are reported. DM: Democratic mayor, ps: absence of public support, SUS: government's internal sustainability capacity, CR: high climate risk, iclei: absence of transnational network.

High public support (PS) did not appear in the necessary analysis result. This finding does not change even if the threshold to assign the membership becomes lower

(z-score = 1.4). Contrary to the conventional wisdom, cities adopted climate plans even without high public support. Out of 21 cities with low public support, 15 cities adopted their local climate plans. Therefore, high public support is *not* a prerequisite for the adoption of local climate plans. Strong public support increases the chance of adopting local climate policies but lack of it does not prohibit adopting the policy.

Second, the third item in Table 4.1 shows a disjunction (“represented as “Logical OR”)—high climate risks OR government sustainability capacity (CR + SUS)—with a consistency score above 0.9 and a relevance score of 0.5, suggesting it can be considered moderately necessary (see Figure 4.1). Translating a disjunction into a higher-level theoretical concept requires a plausible argument that one part of the disjunction could act as a “functionally equivalent condition” to the other (Rohlfing & Schneider, 2013). Such an argument can be made here: experiencing high climate impacts and heightened public risk perception signal that climate issues have become a governance priority, and this prioritization can be institutionally expressed through the establishment of sustainability offices or the appointment of sustainability officers. In this light, this disjunction can reflect the governance priority on climate issues.

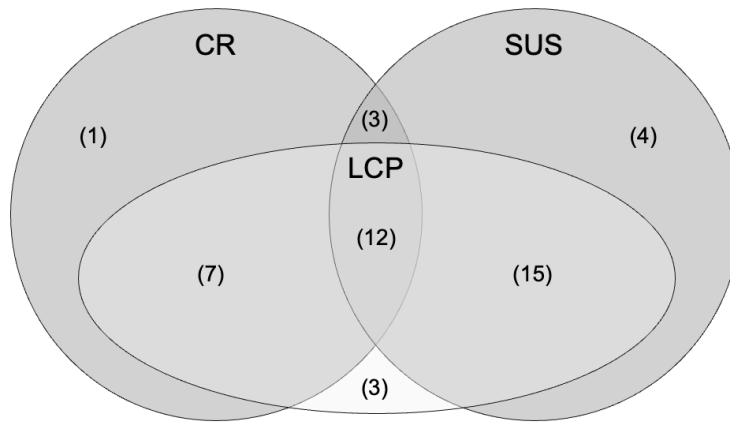


Figure 4.1 Necessary disjunction (CR + SUS)

Note. CR: high climate risk, SUS: government's internal sustainability capacity, LCP: local climate policy. Numbers in parentheses indicate the number of empirical cases located in the corresponding conditions.

Being a moderately necessary condition does not automatically mean it is also sufficient. Instead, it implies that governance priority on climate issues may be a necessary part of a larger sufficient configuration rather than a standalone prerequisite.⁸ A counterfactual statement helps illustrate this point (Mahoney & Barrenechea, 2019): when a city lacks both high climate risk and government sustainability capacity, it would still have adopted climate policies. Empirically, this is the case of Anchorage, AK; Columbus, OH; Cheyenne, WY, which neither condition presents but have still adopted local climate policies (see Appendix B). This confirms that governance priority on climate issues is a necessary part of a larger, sufficient configuration of conditions. We

⁸ Mackie, a philosopher, described this condition as acronym INUS (the condition that is an Insufficient by itself but Necessary part of a larger condition which is Unnecessary but Sufficient for the result (Mahoney et al., 2009).

can therefore anticipate that CR and SUS will re-emerge, either separately or together, as components of the sufficient pathways examined in the next section.

4.3 Sufficiency Paths to Adoption

4.3.1 Truth Table

Table 4.2 displays five conditions and the 20 empirically observed configurations of conditions across cities in the study. The inclusion threshold (incl. column) of 0.750 served as the cutoff for determining which configurations are sufficiently consistent with the outcome to be used. Of the 20 configurations, 12 meet this threshold and are used for logical minimization to generate solutions. Thirteen adoption cities (Des Moines, Wichita, Charlotte, Charleston, SC, Salt Lake City, Honolulu, Baltimore, Portland, Columbus, Louisville, Albuquerque, Cheyenne, Anchorage) are not included in the logical minimization process using the inclusion threshold.

Table 4.2 Truth table of model A: baseline model

ID	PS	DM	CR	SUS	ICLEI	OUT	n	incl.	cases
1	0	0	0	1	0	1	1	1.000	Jacksonville (FL)
2	0	0	0	1	1	1	1	1.000	Omaha (NE)
3	0	0	1	1	1	1	1	1.000	Sioux Falls (SD)
4	0	1	1	0	1	1	1	1.000	Boise City (ID)
5	1	0	1	1	1	1	1	1.000	New York City (NY)
6	1	1	1	0	1	1	1	1.000	Boston (MA)
7	0	1	1	1	0	1	2	1.000	Phoenix (AZ), Kansas City (MO)
8	1	1	0	1	0	1	2	1.000	Wilmington (DE), Providence (RI)
9	1	1	1	0	0	1	2	1.000	Chicago (IL), Philadelphia (PA)
10	0	1	1	0	0	1	3	1.000	Los Angeles (CA), Detroit (MI), Memphis (TN)
11	1	1	0	1	1	1	4	1.000	Portland (ME), Minneapolis (MN), Burlington (VT), Milwaukee (WI)
12	0	1	1	1	1	1	5	1.000	Denver (CO), Atlanta (GA), New Orleans (LA), Houston (TX), Seattle (WA)
13	0	1	0	1	1	0	7	0.714	Little Rock (AR), Indianapolis (IN), Des Moines (IA), Wichita (KS), Charlotte (NC), Charleston (SC), Salt Lake City (UT)
14	1	1	1	1	1	0	5	0.600	Bridgeport (CT), Honolulu (HI), Baltimore (MD), Newark (NJ), Portland (OR)
15	0	1	0	0	1	0	2	0.500	Montgomery (AL), Columbus (OH)
16	0	1	0	1	0	0	4	0.500	Louisville (KY), Albuquerque (NM), Fargo (ND), Charleston (WV)
17	0	0	0	0	0	0	3	0.333	Billings (MT), Virginia Beach (VA), Cheyenne (WY)
18	0	1	0	0	0	0	3	0.333	Anchorage (AK), Jackson (MS), Manchester (NH)
19	0	0	1	0	1	0	1	0.000	Las Vegas (NV)
20	0	0	1	1	0	0	1	0.000	Oklahoma City (OK)

Note. ID: Configuration ID, PS: public support, DM: Democratic mayor, CR: high climate risk, SUS: government's internal sustainability capacity, ICLEI: transnational network, OUT: output value assigned based on an inclusion cut-off threshold (i.e., 0.750), Incl.: sufficient consistency score. Some cities, like Bridgeport, CT, will be considered for solutions even if they did not adopt a climate policy, given the inclusion threshold. Cities in black font indicate those that have adopted local climate policy, and cities in red

font indicate those that have not adopted the policy. White rows are included for logical minimization.

4.3.2 Intermediate Solutions

The sufficiency analysis reports intermediate solutions based on the theoretical assumption that all explanatory conditions (PS, DM, CR, SUS, ICLEI) are expected to contribute to climate policy adoption positively. Intermediate solutions are selected when conservative solutions are overly complex, thereby simplifying them by including only easy counterfactuals—logical remainders based on theoretical and substantive knowledge (Álamos-Concha et al., 2022). Parsimonious solutions using difficult counterfactuals—logical remainders contradicting theoretical knowledge—are not pursued because achieving the simplest possible solutions is not the goal of this study. Conservative and parsimonious solutions are reported in Appendix H.

Table 4.3 Summary of sufficient paths for model A (baseline)

Path	PS	DM	CR	SUS	ICLEI	Cities
A.1	•		⊗	•		Wilmington, DE, Providence, RI; Portland, ME, Minneapolis, MN, Burlington, VT, Milwaukee, WI
A.2	⊗	•	•			Los Angeles, CA, Detroit, MI, Memphis, TN; Boise City, ID; Phoenix, AZ, Kansas City, MO; Denver, CO, Atlanta, GA, New Orleans, LA, Houston, TX, Seattle, WA
A.3		•	•	⊗		Los Angeles, CA, Detroit, MI, Memphis, TN; Boise City, ID; Chicago, IL, Philadelphia, PA; Boston, MA
A.4		⊗	⊗	•		Jacksonville, FL, Omaha, NE
A.5		⊗		•	•	Omaha, NE; Sioux Falls, SD; New York City, NY

Note. • indicates the presence of the condition; ⊗ indicates the absence of the condition. An empty cell indicates that the condition does not matter. Same city can appear in multiple paths.

The analysis identifies five distinct pathways through which cities adopted local climate plans (Table 4.3). High public support appears once in path A.1 combined with government internal sustainability capacity in the absence of high climate risk. PS does not emerge as a part of sufficiency configurations in the remaining four pathways, indicating its prominence as a key driver of local climate policy adoption does not hold in this study.

4.3.2.1 Democratic mayor coupled with climate urgency

Paths A.2 and A.3 highlight the pivotal role of Democratic mayoral leadership, particularly when coupled with climate urgency, in sufficiently driving climate policy adoption. Path A.2 shows that DM and CR *jointly* form a sufficient pathway in the absence of PS. This pathway suggests that when political will and climate urgency align,

climate policy adoption can occur in the absence of citizen support. Path A.3 shows that Democratic mayoral leadership combined with high climate risk constitutes a sufficient pathway in the absence of government sustainability capacity. These two pathways suggest that the “championing” role of Democratic mayor is enabled when reinforced by heightened climate urgency.

4.3.2.2 Government capacity alone is sufficient

Paths A.4 and A.5 show that government sustainability capacity alone is sufficient to drive adoption in cities like Jacksonville and Omaha, even without DM and CR. This suggests that strong institutional capacity alone can sufficiently substitute for both political and environmental drivers of adoption. Path A.5 further supports the importance of government capacities, showing that the sustainability capacity and ICLEI membership ($SUS*ICLEI$) sufficiently enable adoption independent of all other local conditions. Paths A.4 especially reveal that government internal capacity can independently serve as a sufficient condition, compensating for low levels of climate risk as well as for the absence of Democratic Mayoral leadership.

These findings directly challenge the conventional assumption in the literature reviewed in Section 2.2 that public support is the primary prerequisite for local climate policy adoption. Instead, internal political and administrative factors have a potential to be sufficient conditions. Climate policy adoption emerges from different combinations of local conditions, each representing a distinct pathway through which cities can successfully adopt climate policies.

4.3.3 Parameters of Fit

Table 4.4 reports parameters of fit for model A. The overall consistency score of 1.000 and coverage score of 0.649 indicate that the five pathways together account for most empirical cases in the study that adopted climate policy. All paths have perfect consistency scores of 1.000, confirming that all cities captured by these paths adopted climate policies; however, their low raw coverage (total coverage of an outcome set by the specific path) and unique coverage (exclusive coverage of an outcome set by the specific path) indicate that each represents a small number of cases. In terms of raw coverage, path A.2 has the highest score at 0.297, followed by path A.3 at 0.189, reflecting moderate overlap with other pathways. Path A.2 has the highest unique coverage at 0.189, explaining the largest share of adoption cases not accounted for by any other pathway.

Table 4.4 Parameters of fit for model A

Path	Consistency	Raw Coverage	Unique Coverage
A.1: PS*cr*SUS	1.000	0.162	0.162
A.2: ps*DM*CR	1.000	0.297	0.189
A.3: DM*CR*sus	1.000	0.189	0.081
A.4: dm*cr*SUS	1.000	0.054	0.027
A.5: dm*SUS*ICLEI	1.000	0.081	0.054
Overall	1.000	0.649	

Note. Uppercases denote the presence of a condition, whereas lowercases denote the absence of a condition.

The findings of this chapter remain unchanged when the sensitivity of the threshold decision is examined by relaxing z-score to be greater than 1.4 (the red vertical line in Figure 3.7), except that Democratic mayoral leadership alone emerged as a key

sufficient driver, rather than combined with climate risk as shown in this chapter (see Appendix I).

4.4 Summary

This chapter finds that high public support is neither necessary nor sufficient alone for local climate policy adoption. The necessary analysis confirms that no single condition meets the threshold for necessity. Using QCA, the sufficiency analysis identifies five distinct pathways to adoption, among which public support appears as a contributing component in only one configuration (path A.1: PS*cr*SUS). By contrast, Democratic mayoral leadership coupled with high climate risk (DM*CR) and government sustainability capacity (SUS) each independently constitute sufficient conditions, especially SUS alone in path A.4. This suggests that the significance attributed to public support as a primary driver of climate policy adoption in the existing literature may be due to a statistical tendency across large samples, masking individual cities' capacity to achieve climate policy adoption through strong political and administrative leadership despite low public support. These findings reposition public support as a contextual contributor rather than a primary driver, elevating political and institutional capacity as the central enabling conditions for local climate policy adoption.

Compared to public support's contributing role, government capacity particularly emerges as a sole sufficient condition when other local drivers are absent. Also, Democratic mayoral leadership serve as climate "champion" (Haus et al., 2004; Hughes et al., 2018) when problem salience is high, sufficiently enabling climate policy adoption

when a city lacks high public support and administrative capacity (paths A.2 and A.3). When Democratic mayoral leadership is absent (paths A.4 and A.5), government capacity provides an alternative sufficient pathway. Shown in path A.4, government sustainability capacity serves as a standalone sufficient condition when Democratic mayoral leadership and climate urgency is absent. While path A.5 shows that sustainability capacity combined with ICLEI membership forms a sufficient pathway when Democratic mayoral leadership is absent. Paths A.4 and A.5 can be interpreted as institutional capacity sufficiently leading local climate policy adoption.

5 STATE PREEMPTION AND LOCAL CLIMATE POLICY

5.1 Overview

As demonstrated in Chapter 4, cities pursue climate action through multiple conjunctural pathways. Yet these local-level policy decisions do not occur in institutional isolation. Cities are nested within intergovernmental systems characterized by legal constraints and overlapping authority that can either facilitate or prohibit local environmental initiatives (Weiland, 2000). To fully explain variation in local climate policy adoption outcomes, it is essential to move beyond city-level explanations and consider the multilevel governance context within which cities are embedded. This chapter extends the baseline analysis developed in Chapter 4 to examine how multilevel institutional configurations shape local climate policy adoption, situating local climate policy adoption within an intergovernmental hierarchy.

Specifically, this chapter asks: 1) How do cities navigate state-level institutional barriers, particularly state environmental preemption laws, when deciding whether to adopt local climate policy, and 2) Under what conditions can cities adopt climate policies despite unfavorable state policy environments? To answer these questions, Chapter 5 incorporates two key multilevel governance factors: state environmental preemption laws and municipal home rule authority. The multilevel model does not include public support condition since it appeared in one out of five pathways in the baseline model. Also, multilevel governance literature emphasizes institutional systems than public's opinion in climate actions.

Drawing on the “sword and shield” framework developed in Section 2.3, this chapter conceptualizes state environmental preemption as an institutional “sword” that constrains local discretion on climate policy, while home rule functions as a potential legal “shield” that buffers cities from state interference. However, these institutional arrangements are not deterministic. Some cities facing similar state-level constraints exhibit divergent policy outcomes. They successfully adopt climate policies under preemption, while others do not. This variation suggests that institutional constraints interact with local political leadership, administrative capacity, climate risk, and transnational governance networks in systematic ways.

This chapter proceeds in three stages. First, the chapter presents descriptive findings of climate policy adoption rates across the four institutional configurations defined by the presence or absence of state preemption and home rule authority—*frontrunner* (no preemption, home rule), *defiant* (preemption, home rule), *constrained* (preemption, no home rule), and *dependent* (no preemption, no home rule) cities. Second, a necessity analysis evaluates whether any single multilevel condition or disjunction constitutes a prerequisite for climate policy adoption. Third, a sufficiency analysis identifies multiple pathways through which cities adopt climate policies under varying institutional constraints.

5.2 Cities in the “Sword and Shield” Matrix

Figure 5.1 illustrates the empirical landscape of the “sword and shield” dynamic in local climate policymaking, with states that have enacted environmental preemption

shaded in red, home rule cities shown as green filled circles, and cities without home rule shown as green empty circles.

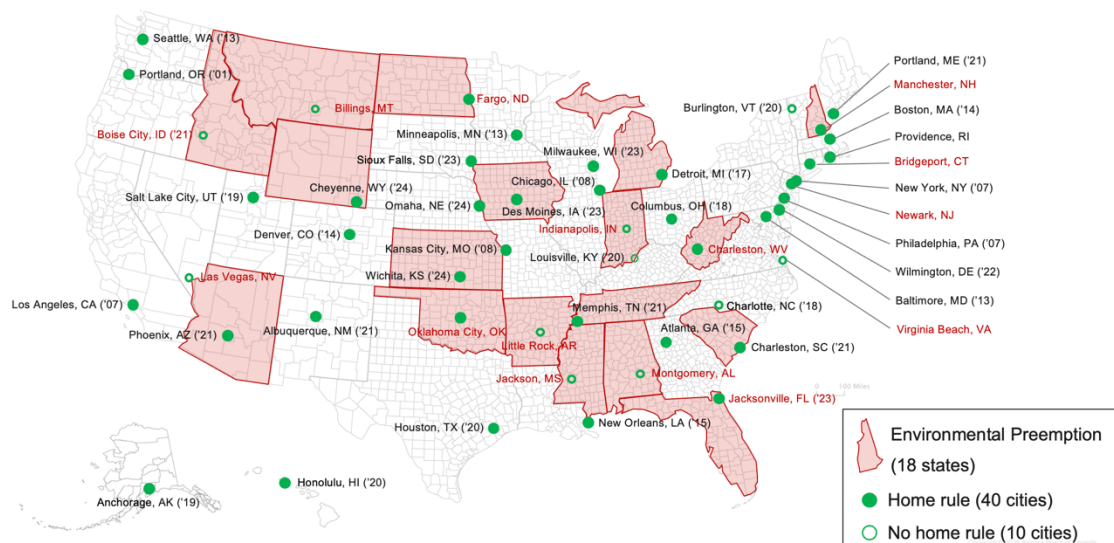


Figure 5.1 State environmental preemption and home rule

Note. Numbers in the parenthesis shows the adoption year of the initial climate plans

Table 5.1 shows the distribution of 50 cities across different multilevel institutional arrangements presented in Figure 2.3. Columns distinguish between states with and without environmental preemption laws, while rows differentiate cities with their home rule status. Cities in black font in Table 5.1 adopted climate policies (LCP), while cities in red font did not. Each column reports how many cities fall within each institutional arrangement and how many cities in each cell adopted climate policy (thus, the adoption rate).

Table 5.1 Multilevel institutional arrangements and local climate policy adoption

	Environmental Preemption	No Environmental Preemption	% cities adoption
Home Rule	<i>Defiant</i> Phoenix (AZ), Jacksonville (FL), Des Moines (IA), Wichita (KS), Detroit (MI), Manchester (NH), Fargo (ND), Oklahoma City (OK), Charleston (SC), Memphis (TN), Charleston (WV), Cheyenne (WY)	<i>Frontrunner</i> Anchorage (AK), Los Angeles (CA), Denver (CO), Bridgeport (CT) , Wilmington (DE), Atlanta (GA), Honolulu (HI), Chicago (IL), Louisville/Jefferson County (KY), New Orleans (LA), Portland (ME), Baltimore (MD), Boston (MA), Minneapolis (MN), Kansas City (MO), Omaha (NE), Newark (NJ) , Albuquerque (NM), New York City (NY), Columbus (OH), Portland (OR), Philadelphia (PA), Providence (RI), Sioux Falls (SD), Houston (TX), Salt Lake City (UT), Seattle (WA), Milwaukee (WI)	34 out of 40 cities: 85%
	8 out of 12 cities (67%)	26 out of 28 cities (93%)	
No Home Rule	<i>Constrained</i> Montgomery (AL), Little Rock (AR), Boise City (ID), Indianapolis (IN), Jackson (MS), Billings (MT)	<i>Dependent</i> Las Vegas (NV) , Charlotte (NC), Burlington (VT), Virginia Beach (VA)	3 out of 10 cities: 30%
	1 out of 6 cities (17%)	2 out of 4 cities (50%)	
% cities adoption	9 out of 18 cities: 50%	28 out of 32 cities: 88%	

Note: Cities in black font indicate those that have adopted local climate policy, and cities in red font indicate those that have not adopted the policy.

In Table 5.1, the last row and column show the percentages of cities that adopted climate policy by the status of state environmental preemption and home rule status of local governments, respectively. Of the 32 cities in states without preemption, 28 adopted local climate policies (88%). Nine out of 18 cities in states with preemption adopted climate policies (50%). In the last column, cities with home rule demonstrate higher adoption rates (85%) than those without home rule authority (30%). Both state policy environment and local autonomy appear to play a role in climate policy adoption. However, the difference in adoption rates is larger for home rule than for state preemption.

The institutional arrangements between the state and municipality reveal important patterns in climate policy adoption rates. The most favorable conditions (*frontrunners*) achieve the highest adoption rate at 93%. State environmental preemption appears to constrain local climate policy adoption, but the effect varies depending on home rule authority: cities with home rule (*defiant*) maintain relatively higher adoption rates (67%) under preemption compared to cities without home rule authority (17%) facing similar state restrictions (*constrained*). Cities in the *defiant* category exhibit a relatively higher adoption rate (67%) than those in the *dependent* category (50%), suggesting that home rule authority has a more substantial influence on local climate policy adoption than state environmental preemption.

5.3 Home Rule is a Necessity Condition

The necessary analysis results reported in Table 5.2 identify home rule authority (HR) as a single necessary condition for local climate policy adoption. With a consistency score of 0.919 and a relevance score of 0.625, HR exceeds both conventional thresholds, indicating that formal legal autonomy is present most of the time among cities that adopted local climate policy. Substantively, this finding sets up the theoretical expectation that local governments require formal legal autonomy to initiate and implement climate policy.

The results also identify a disjunction, represented as “Logical OR,” that meets the conventional necessity thresholds: the absence of state environmental preemption (sp), the absence of Democratic mayoral leadership (dm), and high climate risk (CR). This disjunction meets both conventional necessity thresholds, with consistency and relevance scores identical to those of HR. However, a disjunction composed partly of negated conditions poses difficulties for interpreting it into a higher-level concept. For this reason, the disjunction is not given substantive consideration.

Table 5.2 Necessity analysis

		Consistency	Relevance	Coverage
1	HR	0.919	0.625	0.850
2	sp + dm + CR	0.919	0.625	0.850

Note. HR: local home rule, sp: absence of state preemption laws, dm: absence of Democratic mayor, CR: high climate risk. Conditions above 0.9 consistency score and above 0.6 relevance score are reported.

5.4 Sufficiency Paths to Adoption within Multilevel Systems

5.4.1 Truth Table

Table 5.3 displays six conditions and the 26 empirically observed configurations of conditions across cities in the study. The inclusion threshold (incl. column) of 0.750 served as the cutoff for determining which configurations are sufficiently consistent with the outcome to be used in logical minimization. Of the 26 configurations, 17 meet this threshold and are used for logical minimization to generate solutions. In this process, configurations that include 2 non-adoption cities are included in the minimization process because those cities' configurations are consistent with adoption at or above the 0.750 threshold. These cases reflect the probabilistic nature of sufficiency in QCA in that the configurations are more consistent with adoption than non-adoption, but adoption is nevertheless not guaranteed. In this multilevel mode, those thirteen adoption cities that were excluded in the baseline model are included in the logical minimization process.

Table 5.3 Truth table of model B: multilevel model

ID	SP	HR	DM	CR	SUS	ICLEI	OUT	n	incl.	cases
1	0	1	0	0	1	1	1	1	1.000	Omaha (NE)
2	0	1	1	0	0	0	1	1	1.000	Anchorage (AK)
3	0	1	1	0	0	1	1	1	1.000	Columbus (OH)
4	0	1	1	1	0	1	1	1	1.000	Boston (MA)
5	0	1	1	1	1	0	1	1	1.000	Kansas City (MO)
6	1	0	1	1	0	1	1	1	1.000	Boise City (ID)
7	1	1	0	0	0	0	1	1	1.000	Cheyenne (WY)
8	1	1	0	0	1	0	1	1	1.000	Jacksonville (FL)
9	1	1	1	1	1	0	1	1	1.000	Phoenix (AZ)
10	0	0	1	0	1	1	1	2	1.000	Charlotte (NC), Burlington (VT)
11	0	1	0	1	1	1	1	2	1.000	New York City (NY), Sioux Falls (SD)
12	1	1	1	1	0	0	1	2	1.000	Detroit (MI), Memphis (TN)
13	0	1	1	1	0	0	1	3	1.000	Los Angeles (CA), Chicago (IL), Philadelphia (PA)
14	1	1	1	0	1	1	1	3	1.000	Des Moines (IA), Wichita (KS), Charleston (SC)
15	0	1	1	0	1	0	1	4	1.000	Wilmington (DE), Louisville (KY), Albuquerque (NM), Providence (RI)
16	0	1	1	0	1	1	1	4	1.000	Portland (ME), Minneapolis (MN), Salt Lake City (UT), Milwaukee (WI)
17	0	1	1	1	1	1	1	10	0.800	Denver (CO), Bridgeport (CT) , Atlanta (GA), Honolulu (HI), New Orleans (LA), Baltimore (MD), Newark (NJ) , Portland (OR), Houston (TX), Seattle (WA)
18	0	0	0	0	0	0	0	1	0.000	Virginia Beach (VA)
19	0	0	0	1	0	1	0	1	0.000	Las Vegas (NV)
20	1	0	0	0	0	0	0	1	0.000	Billings (MT)
21	1	0	1	0	0	0	0	1	0.000	Jackson (MS)
22	1	0	1	0	0	1	0	1	0.000	Montgomery (AL)
23	1	1	0	1	1	0	0	1	0.000	Oklahoma City (OK)
24	1	1	1	0	0	0	0	1	0.000	Manchester (NH)
25	1	0	1	0	1	1	0	2	0.000	Little Rock (AR), Indianapolis (IN)
26	1	1	1	0	1	0	0	2	0.000	Fargo (ND), Charleston (WV)

Note. ID: Configuration ID, SP: state preemption laws, HR: local home rule, DM: Democratic mayor, CR: high climate risk, SUS: government's internal sustainability

capacity, ICLEI: transnational network, OUT: output value assigned based on an inclusion cut-off threshold (i.e., 0.750 in our study), Incl.: sufficiency inclusion score. Some cities, such as Bridgeport, CT, and Newark, NJ, will be considered for solutions even if they have not adopted a climate policy, given the inclusion threshold. Cities in black font indicate those that have adopted local climate policy, and cities in red font indicate those that have not adopted the policy. White rows are included for logical minimization.

5.4.2 Conservative Solutions

Table 5.4 presents the summary of sufficient paths leading to local climate policy adoption, with specific cities (and their states) listed for each pathway. The sufficiency analysis reports conservative solutions that rely solely on empirical cases, without using any logical remainders. This solution type is most faithful to the data and is recommended when complexity does not impede interpretation (Álamos-Concha et al., 2022). Intermediate and parsimonious solutions are reported in Appendix J.

Table 5.4 Summary of sufficient paths for model B (multilevel)

Path IDs	Multilevel conditions		Local conditions				Cities
	SP	HR	DM	CR	SUS	ICLEI	
B.1	•	•	⊗	⊗		⊗	Cheyenne, (WY); Jacksonville (FL)
B.2	•	⊗	•	•	⊗	•	Boise City (ID)
B.3		•	•	•		⊗	Los Angeles (CA), Chicago (IL), Philadelphia (PA); Kansas City (MO); Detroit (MI), Memphis (TN); Phoenix (AZ)
B.4		•	•	⊗	•	•	Portland (ME), Minneapolis (MN), Salt Lake City (UT), Milwaukee (WI); Des Moines (IA), Wichita (KS), Charleston (SC)
B.5	⊗	•	•				Anchorage (AK); Columbus (OH); Wilmington (DE), Louisville (KY), Albuquerque (NM), Providence (RI); Portland (ME), Minneapolis (MN), Salt Lake City (UT), Milwaukee (WI); Los Angeles (CA), Chicago (IL), Philadelphia (PA); Boston (MA); Kansas City (MO); Denver (CO), Bridgeport (CT) , Atlanta (GA), Honolulu (HI), New Orleans (LA.), Baltimore (MD), Newark (NJ) , Portland (OR), Houston (TX), Seattle (WA)
B.6	⊗	•			•	•	Omaha (NE); New York City (NY), Sioux Falls (SD); Portland (ME), Minneapolis (MN), Salt Lake City (UT), Milwaukee (WI); Denver (CO), Bridgeport (CT) , Atlanta (GA), Honolulu (HI), New Orleans (LA), Baltimore (MD), Newark (NJ) , Portland (OR), Houston (TX), Seattle (WA)
B.7	⊗		•	⊗	•	•	Charlotte (NC), Burlington (VT); Portland (ME), Minneapolis (MN), Salt Lake City (UT), Milwaukee (WI)

Note. • indicates the presence of the condition; ⊗ indicates the absence of the condition. An empty cell indicates that the condition does not matter. Same city can appear in multiple paths.

5.4.2.1 Pathways to overcome multilevel constraints

Two sufficiency pathways, B.1 and B.2, demonstrate how cities successfully adopted climate policies despite state preemption constraints. In path B.1, home rule authority (HR) alone was sufficient for Cheyenne and Jacksonville to navigate the institutional barrier despite the absence of other conditions. Path B.2 reveals an alternative strategy when home rule is not available. Cities without home rule must assemble multiple reinforcing local drivers: democratic mayoral leadership (DM), high climate risk (CR), and ICLEI membership (ICLEI) in the absence of government sustainability capacity (sus). Boise City is an example of this resource-intensive pathway. These paths show that cities can employ distinct institutional strategies to circumvent state constraints, either through formal legal authority (home rule) or through local governance resources (political leadership and external networks), and urgent climate action in the absence of such formal authority.

When the presence or absence of state preemption laws (SP) does not matter, cities lacking in administrative capacity or climate urgency were able to adopt climate policy as long as they have HR (shown in paths B.3 and B.4). All of the *defiant* cities that adopted local climate policies in Table 5.1 are found in B.1 (Cheyenne and Jacksonville), B.3 (Detroit, Memphis, and Phoenix), and B.4 (Des Moines, Wichita, and Charleston, SC) paths in Table 5.4. Path B.3 demonstrates that DM combined with CR and HR conditions forms a sufficient pathway for climate defiance. This combination underscores the importance of local-level leadership and authority motivated by the urgency of climate action. Notably, 4 cities (Los Angeles, Chicago, Kansas City, and Philadelphia)

captured in path B.3 are among the 6 cities that adopted their climate policies before 2010, when climate governance was still in its infancy.

In contrast, path B.4 reveals that cities with low climate risk (cr) require additional institutional resources—both internal sustainability capacity (SUS) and ICLEI—alongside DM and HR to achieve defiance. The divergent pathways indicate that high climate risk plays a role in successful defiance: high-climate-risk cities can overcome state opposition through political leadership and local administrative authority, while low-climate-risk cities must supplement political will with enhanced organizational capacity and external networks.

5.4.2.2 Pathways to effectively navigate supportive policy environments

Table 5.4 also shows multiple pathways to successful climate policy adoption in relatively favorable policy environments (B.5 – B.7). These paths cover most cities, and most of them are categorized as *frontrunners* in Table 5.1. *Frontrunner* cities are captured by two pathways (B.5 and B.6) that include either DM or a combination of SUS and ICLEI with home rule authority.

In this favorable state environment, local home rule creates divergent pathways. First, DM is sufficient for cities covered by path B.5 with HR. In fact, all cities are *frontrunners* in path B.5. Alternatively, the combination of HR, SUS, and ICLEI is equally effective in explaining climate policy adoption, regardless of DM (path B.6). This path includes three cities (Omaha, New York City, and Sioux Falls) among 28 *climate frontrunners* not covered by path B.5.

When the home rule condition is irrelevant, and state preemption is absent, DM, combined with SUS and ICLEI, appeared as part of sufficiency pathways (path B.7). All *dependent* cities are captured in path B.7, and CR was *not* a part of the driving factor for them to adopt climate policies. For *dependent* cities, strong political leadership and administrative capacity (both internal and external) can sufficiently lead climate policy adoption. In this sense, *dependent* cities differ from *frontrunners* cities in that the former rely on multiple local drivers, such as Democratic mayoral leadership, government sustainability capacity, and ICLEI membership, to pursue climate actions, whereas the latter need only one or the other to do so.

5.4.3 Parameters of Fit

Table 5.5 reports parameters of fit for model B. The overall consistency score of 0.949 and coverage score of 1.000 indicate that the seven pathways together account for most empirical cases in the study that adopted climate policy. Paths B.1 to B.4 and B.7 have perfect consistency scores of 1.000; however, their coverage scores are low, indicating that a small number of cities that adopted climate policies are captured by these paths. While paths B.5 and B.6 do not have perfect consistency scores, they cover most cases, given their much higher raw coverage scores. In terms of raw coverage, path B.5 has the highest score at 0.622, followed by path B.6 at 0.405; however, their unique coverage scores are low, reflecting considerable overlap with other pathways.

Table 5.5 Parameters of fit for model B

Path	Consistency	Raw Coverage	Unique Coverage
B.1: SP*HR*dm* iclei*cr	1.000	0.054	0.054
B.2: SP*hr*DM* sus*ICLEI*CR	1.000	0.027	0.027
B.3: HR*DM* iclei*CR	1.000	0.189	0.081
B.4: HR*DM* SUS*ICLEI*cr	1.000	0.189	0.081
B.5: sp*HR*DM	0.920	0.622	0.189
B.6: sp*HR*SUS*ICLEI	0.882	0.405	0.081
B.7: sp*DM*SUS*ICLEI*cr	1.000	0.162	0.054
Overall	0.949	1.000	

Note. Uppercases denote the presence of a condition, whereas lowercases denote the absence of a condition.

5.5 Summary

Findings show that configurations vary across different multilevel governance arrangements. This supports multilevel governance theory, suggesting that climate governance involves nested governmental jurisdictions, authorities, and various interests (Bulkeley & Betsill, 2005; Heinen et al., 2022; Hughes et al., 2018). Also, multiple pathways suggest that constraining multilevel institutional environments does not lead to deterministic outcomes in local climate policy adoption. Governance innovations can be achieved by leveraging various governance resources to advance climate policy goals, even in unfavorable institutional environments. To navigate such an environment, cities may focus on capitalizing on their specific strengths.

Institutional arrangements between state and local governments depicted by the “sword and shield” framework changes the logic of local climate actions. Unfavorable multilevel governance environments are not necessarily a dead end. As seen in Table 5.1, 9 out of 18 cities still adopted climate policies despite state environmental preemption,

indicating that state preemption is not an absolute barrier. Cities can identify alternative ways to circumvent vertical multilevel institutional constraints and adopt climate policies. The relationship between state control and local autonomy for climate action is more nuanced than simple hierarchical dominance.

Under state preemption laws, institutional protection alone becomes a sufficient factor that helps cities overcome state constraints and become *defiant* when addressing climate issues. *Defiant* cities demonstrate institutional resilience and adaptive capacity, thereby enhancing local climate resilience. Unlike these *defiant* cities, when cities lack self-governing power, they must mobilize multiple different combinations of available governing resources. These *constrained* cities require political capacity, external support from transnational networks, and high climate threats to justify their climate actions. This combination compensates for the absence of local autonomy to escape the institutional trap. For scholars and city practitioners, these findings provide a practical insight that the less institutional authority cities have, the more political and administrative resources they must mobilize to succeed in pursuing climate actions.

When state constraints are removed, pathways for local climate policy adoption become more direct and traditional. *Frontrunner* cities enjoy favorable state policy environment for them to flexibly pursue climate actions and adopting policies. These cities are willing to take on innovative climate actions and serve as exemplars for others to commit similar actions (van der Heijden, 2018). Given favorable vertical institutional environments, *frontrunner* cities can enjoy the luxury of choice in deploying institutional,

political, and social capitals to develop experimental and innovative climate governance (Barrett et al., 2024; van der Heijden, 2018).

Unlike *frontrunners*, *dependent* cities need strong local conditions, such as political leadership and administrative capacity both internal and external, to address climate risk due to lack of home rule authority. Lack of home rule does not necessarily prevent climate policy adoption altogether; it requires multiple additional resources. Even in a state whose policy environments may be more challenging than in other cities, municipalities can still identify viable pathways to implement local climate policies by investing in sustainability capacity or joining transnational networks, provided they have Democratic mayoral leadership.

Comparison between *constrained* and *defiant* cities also suggest a shift in the logic of climate policy adoption from democratic responsiveness to institutional maneuvering. Under institutional constraints, horizontal local-level resources, such as transnational networks and climate urgency, may help cities maneuver an unfavorable state policy environment. For example, Boise City, while it shares democratic mayoral leadership and high climate risk as local-level sufficiency conditions with some *defiant* cities like Detroit, Memphis, Phoenix in path B.3, leveraged its ICLEI membership to “escape” institutional traps and adopt climate policies when home rule was not available. Constraints do not just limit action: they may also create incentives for creative governance solutions leveraging institutional capacity, problem severity, and democratic mayoral leadership.

While political and technical capacities and institutional autonomy are essential to withstand state preemption, the absence of these conditions cannot explain why 13 out of 50 cities studied did not adopt climate policies. Some of these cities share similar conditions that helped *defiant* cities adopt climate policies. For example, Manchester, Fargo, and Charleston, WV, are *defiant* cities with home rule authority and Democratic mayoral leadership, similar to other *defiant* cities that adopt local climate policies. Fargo, Oklahoma City, and Charleston, WV, are also *defiant* cities that have home rule authority and government sustainability capacity, but they have not adopted climate policies. It is crucial to note that the QCA analysis in this study cannot explain the climate inaction of these 13 cities. This remains for research in the next chapter.

6 LOCAL CLIMATE POLICY NON-ADOPTION

6.1 Overview

Chapters 4 and 5 identify multiple sufficient pathways under which cities adopt local climate policy. However, those pathways do not explain why some cities remain inactive. The logic of action and inaction differs. Building on the theoretical framework of local climate policy inaction developed in Section 2.4, Chapter 6 shifts the analytical focus from policy adoption to policy non-adoption as a distinct and meaningful outcome. Rather than treating non-adoption as the mere absence or inverse of adoption, this chapter conceptualizes local climate policy inaction as the product of specific decision-making mechanisms shaped by intergovernmental, political, and administrative constraints. The central objective is to understand how inaction may arise within the complex intergovernmental landscape. This objective is achieved by carefully investigating the thirteen study cases that did not adopt any of the climate plans between 2000 and 2024.

The analysis in this chapter is based on the idea of asymmetry between adoption and non-adoption. Using the same framework to explain both adoption and non-adoption creates a theoretical contradiction. To illustrate this point, a sufficiency analysis of non-adoption using conditions in the multilevel framework is performed (see Appendix K) and juxtaposed with the sufficiency analysis of adoption (see Appendix L).

The chapter proceeds in three steps. First, it examines non-adoption cities carefully, especially focusing on the level of climate risk, because it is plausible to assume that low problem salience requires no policy action. Second, it identifies multiple pathways through which policy non-adoption occurs even when high climate risk is

present. The analysis demonstrates that similar institutional conditions can activate different decision-making mechanisms depending on the political and administrative context in which cities operate. Third, the chapter synthesizes these pathways and interprets them in relation to the theoretical typology of reluctant, imposed, calculated, and ideological inaction.

6.2 Climate Risks and Policy Inaction

The relationship between problem salience and policy is intricate. Public policy is enacted to address social problems, and a logical conjecture follows: a policy response will emerge once a problem becomes sufficiently salient. This implies that low problem salience is likely to explain a lack of response. The empirical reality, however, is more complicated because agreeing on whether a social condition constitutes a problem is itself one of the most challenging tasks in public policy. How individuals perceive climate change and how they estimate the level of social consensus on it differ significantly (Leviston et al., 2013). This disconnect between actual and estimated public opinion tends to overestimate the proportion of climate skeptics in communities, in turn leading citizens and policymakers to underestimate the public concern for climate change and the need of climate actions (Sparkman et al., 2022). Even when public consensus on the problem's salience exists, policy responses range from action to inaction. COVID-19 in 2020 posed an unambiguous public health threat for most Americans, yet state responses diverged starkly: some governors declared a public health emergency and issued “stay-at-home” orders, while others took little or no formal action (C. Wang et al., 2024). By the

same token, it should not be assumed that even if climate risk is evident in cities, problem salience may not be translated into formal policy action. Whether high climate risk drives local climate policy adoption—or low climate risk and non-adoption—thus remains an empirical question.

Table 6.1 presents the distribution of local climate policy adoption and non-adoption across cities with high and low climate risks (as operationalized in Section 3.2.2). Among the 50 cities included in this dissertation, 27 are classified as facing low climate risks, while 23 face greater climate risks. Although 9 of 13 cities that did not adopt climate policies face low climate risks, 4 cities experiencing substantial climate risks also exhibit policy non-adoption, suggesting that low climate risk is not a necessary condition for local climate policy inaction. In set-theoretic terms, if low climate risk were a necessary condition for policy inaction, then inaction would never occur when climate risk is high. Conversely, approximately two-thirds of cities facing low climate risks have adopted climate policies, further undermining the expectation that limited problem salience alone explains non-adoption.

Table 6.1 Local climate policy adoption and non-adoption by climate risks

	High climate risks	Low climate risks	Total
Climate policy adoption	19	18	37
Climate policy non-adoption	4	9	13
Total	23	27	50

6.3 Sufficiency Paths to Non-adoption Cities

6.3.1 Truth Table

As summarized in Table 3.6, the analysis employs 4 theoretically grounded constructs (Table 2.3). The study cases are organized into a truth table that represents all logically possible configurations of the 4 explanatory conditions (see Table 6.2). Out of the 36 logically possible configurations ($3^2 \times 2^2$), reflecting the combination of two multi-value and two binary explanatory conditions. Nine configurations were identified with empirical cases of non-adoption. Rows 1-5 show a high inclusion score. This implies that rows 6-9 include adoption and non-adoption cities, and their configurations are not adequately consistent to be considered in the logical minimization process. See the full dataset for the non-adoption in Appendix I.

Table 6.2 Truth table

ID	SCP	G-M	SM	CR	OUT	n	incl.	cases
1	0	0	1	1	1	1	1.000	Bridgeport (CT)
2	1	1	1	0	1	1	1.000	Manchester (NH)
3	1	2	1	0	1	1	1.000	Billings (MT)
4	2	2	0	1	1	1	1.000	Oklahoma City (OK)
5	2	1	1	0	1	5	0.800	Little Rock (AR), Jackson (MS), Fargo (ND), Charleston (WV), Charleston (SC)
6	2	1	0	0	0	3	0.667	Montgomery (AL), Indianapolis (IN), Des Moines (IA)
7	0	2	0	0	0	2	0.500	Omaha (NE), Virginia Beach (VA)
8	0	1	0	1	0	7	0.143	Los Angeles (CA), Atlanta (GA), New Orleans (LA), Kansas City (MO), Las Vegas (NV), Philadelphia (PA), Houston (TX)
9	0	0	0	1	0	8	0.125	Denver (CO), Honolulu (HI), Chicago (IL), Baltimore (MD), Boston (MA), Newark (NJ), Portland (OR), Seattle (WA)
10	0	2	0	1	0	1	0.000	New York City (NY)
11	0	2	1	1	0	1	0.000	Sioux Falls (SD)
12	1	2	0	0	0	1	0.000	Jacksonville (FL)
13	2	0	0	0	0	1	0.000	Wichita (KS)
14	2	2	1	0	0	1	0.000	Cheyenne (WY)
15	0	0	1	0	0	2	0.000	Wilmington (DE), Providence (RI)
16	1	1	0	1	0	2	0.000	Phoenix (AZ), Detroit (MI)
17	2	1	0	1	0	2	0.000	Boise City (ID), Memphis (TN)
18	0	1	1	0	0	3	0.000	Portland (ME), Salt Lake City (UT), Burlington (VT)
19	0	1	0	0	0	7	0.000	Anchorage (AK), Louisville (KY), Minneapolis (MN), Albuquerque (NM), Charlotte (NC), Columbus (OH), Milwaukee (WI)

Note: ID: Configuration ID, SCP: state-level climate policy direction, G-M: partisan (mis)match between governor and mayor, SM: small city, CR: high climate risk, OUT: output value assigned based on an inclusion cut-off threshold (i.e., 0.750 in this study), Incl.: sufficiency inclusion score. Cities in black font indicate those that have adopted local climate policy, and cities in red font indicate those that have not adopted the policy. White rows are included for logical minimization.

6.3.2 Conservative Solutions

The sufficiency analysis reports conservative solutions (intermediate and parsimonious solutions are reported in Appendix J). The analysis identifies five distinct pathways through which cities did not adopt local climate plans (see Table 6.3). Interpretation of the solution paths is provided as configurational propositions for climate policy inaction in Section 6.4.

Table 6.3 Sufficient paths for model C (non-adoption)

Path	CR	SCP	G-M	SM	Cities
C.1: Reluctant	•	SCAP	DG-DM	•	Bridgeport, CT
C.2: Ideological	•	SP	RG-RM	⊗	Oklahoma City (OK)
C.3: Imposed	⊗	SP	RG-DM	•	Little Rock (AR), Jackson (MS), Fargo (ND), Charleston (SC), Charleston (WV)
C.4: Calculated	⊗	SP & SCAP	RG-RM	•	Billings (MT)
C.5: Calculated	⊗	SP & SCAP	RG-DM	•	Manchester (NH)

Note. CR: high climate risk, SM: small city, SCP: state-level climate policy direction, SP: state preemption laws, SCAP: state climate action plans, G-M: partisan (mis)match between governor and mayor, DG-DM: Democratic governor-Democratic mayor, RG-RM: Republican governor-Republican mayor, RG-DM: Republican governor-Democratic mayor. • indicates the presence of the condition; ⊗ indicates the absence of the condition.

6.3.3 Parameters of Fit

Table 6.4 reports parameters of fit for model C. The overall consistency score of 0.889 and coverage score of 0.615 indicate that the five pathways together account for most empirical cases in the study that did not adopt climate policy. Except path C.3,

remaining 4 paths have perfect consistency scores of 1.000; however, their coverage scores are low, indicating that the number of covered non-adopter cities by these paths are small. While path C.3 does not have perfect consistency scores, they cover most cases, given their much higher raw coverage scores.

Table 6.4 Parameters of fit for model C

Path	Consistency	Raw Coverage	Unique Coverage
C.1: CR*SCAP*DG-DM*SM	1.000	0.077	0.077
C.2: CR*SP*RG-RM*sm	1.000	0.077	0.077
C.3: cr*SP*RG-DM*SM	0.800	0.308	0.308
C.4: cr*SP&SCAP*RG-DM*SM	1.000	0.077	0.077
C.5: cr*SP&SCAP*RG-RM*SM	1.000	0.077	0.077
Overall	0.889	0.615	

Note. Uppercases denote the presence of a condition, whereas lowercases denote the absence of a condition.

6.4 Configurational Propositions

The analysis shows that the level of problem salience separates five sufficient pathways into two groups. The first two pathways (C.1 and C.2) are characterized by high climate risk, indicating climate urgency. Yet, cities in these pathways did not adopt climate policies. Specific configurations of conditions reveal decision-making mechanisms that impede cities from acting even under climate urgency. The remaining three pathways (C.3-C.5) identify decision-making mechanisms that drive climate inaction independently of low problem salience. Since the level of climate risk alone cannot explain either adoption or non-adoption, understanding how administrative, legal,

and political constraints combine to produce different types of climate inaction is crucial for identifying strategies to overcome barriers to local climate action, particularly given that low climate risk today does not guarantee that risk will remain low in the future.

Below, I develop two configurational propositions based on the level of climate risk. To further refine these propositions, I articulate hypotheses for local climate policy non-adoption.

Proposition 1. Under high climate risk conditions, lack of local resources or shared ideological commitment to deprioritize climate action leads to inaction.

Path D.1 combines high climate risk (CR), state climate action plan (SCAP), partisan match between a Democratic governor and a Democratic mayor (DG-DM), and a small city (SM). Under climate urgency and state-level climate actions with a pro-climate orientation of Democratic governors and mayors, this pathway's expected outcome is local climate policy adoption. Nevertheless, the outcome is non-adoption, which can be attributed to a lack of administrative capacity reflected by SM. While prior research finds that state climate action plans can help smaller cities engage in climate and sustainability initiatives (Homsy, 2018), SM suggests limited internal capacity, such as staffing stability, fiscal stress, or competing priorities in service delivery demands. The likelihood of state engagement does not necessarily culminate in the adoption of a formal climate policy document in small cities. Their local leaders may recognize the problem and

engage with a supportive institutional environment yet still fail to convert intention and engagement into formal policy adoption.

H1. Under a high level of climate risk, if a state provides a favorable policy environment, a small city's non-adoption of formal climate plans is attributable to limited resources.

In this light, this pathway reveals that even when enabling intergovernmental, political, and problem salience conditions are present, local climate policy adoption may still fail to materialize. This pattern suggests that *reluctant inaction* may reflect a bottleneck in translating engagement into formal policy adoption, where a favorable policymaking environment is insufficient to fully offset internal administrative constraints. In other words, this non-adoption can best be interpreted as stalled follow-through due to capacity and coordination limits, despite otherwise favorable political and institutional conditions.

While state preemption (SP) appears in path C.2, it may not necessarily lead to imposed inaction as expected in the literature. Instead, SP operates in conjunction with high climate risk (CR), partisan match between a Republican governor and a Republican mayor (RG-RM), and a large city (sm). This configuration shifts the decision-making mechanism from value foreclosure through coercion—represented by SP—to value alignment—represented by RG-RM. Rather than resisting state constraints, politically

aligned local leadership shares the state’s ideological orientation toward limited or non-interventionist climate policy. Thus, although preemption legally narrows the policymaking space available to local governments, partisan match reinforces the value system underpinning state environmental preemption. In this context, non-adoption does not reflect a forced response to state imposition, but rather *ideological inaction*, which emerges when local officials view the state’s non-intervention approach as consistent with their own ideological disposition toward deprioritizing climate actions.

This pathway captures Oklahoma City as an empirical case, which experienced extreme heat days. However, the city’s severe climate threats do not necessarily translate into policy action when the governing partnership between state and local leaders is based on shared ideological commitments that favor climate skepticism or minimal policy intervention, rendering formal climate policy adoption unnecessary or undesirable even in the face of escalating climate risks.

H2. Under a high level of climate risk, non-adoption of formal climate plans occurs even in a resourceful city when environmental preemption laws are in place, and both state and city leadership are Republican.

As demonstrated in path C.2, partisan alignment shapes how state environmental preemption produces different types of policy inaction beyond simply triggering imposed inaction, or “chilling effect.” The subsequent set of pathways examines how distinct

decision-making mechanisms operate under low climate risk and state environmental preemption, particularly when states claim environmental leadership simultaneously through environmental preemption and statewide climate action plans.

Proposition 2. Under low climate risk conditions, the state’s power or mixed policy direction leads to inaction.

Path C.3 is a classic example of *imposed inaction* resulting from the combination of low climate risk (cr), state preemption (SP), a partisan mismatch between a Republican governor and a Democratic mayor (RG-DM), and a small city (SM). Little Rock, Jackson, Fargo, and Charleston, West Virginia, exemplify this configuration. In these cities, state governments exercise the preemption doctrine, effectively foreclosing local climate initiatives and rendering non-adoption a compelled outcome. Partisan mismatch further heightens this constraint, as local officials’ climate priorities diverge sharply from those of state leadership, raising the costs of pursuing independent climate action. At the same time, a small city size signals limited administrative capacity, reducing the city’s ability to dispute, negotiate, or creatively navigate state restrictions.

H3. Under a low level of climate risk, a state led by a Republican governor with environmental preemption results in non-adoption of formal climate plans in a small city with a Democratic mayor.

Under these conditions, local climate policy non-adoption reflects *imposed inaction*, a form of non-intervention driven not by insufficient political will but by the institutional, political, and administrative costs of challenging state authority. Local governments refrain from adopting climate policies because the structural barriers embedded in the state-local power hierarchy make action infeasible.

Pathways C.4 and C.5 both occur under the combination of low climate risk (cr), state environmental preemption *and* state climate action plan (SP & SCAP), and a small city (SM). Yet, they reflect different mechanisms of policy non-adoption. Partisan alignment between governors and mayors differentiates these two pathways.

Path D.4 (Billings, MT) shows SP & SCAP with a partisan match between a Republican governor and a Republican mayor (RG-RM). Unlike path C.2, non-adoption here does not depend only on the value alignment in deprioritizing climate action (i.e., SP and RG-RM). Instead, SCAP with SP simultaneously narrows municipal discretion and legitimizes climate governance as a state-level responsibility, implying state environmental leadership and the implicit authorization to delegate responsibility for climate action. This setting signals that climate governance is handled at higher levels, rendering local non-adoption a reasonable and defensible choice, particularly for cities under low climate risks and with limited administrative capacity. Under this institutional configuration, non-adoption becomes a strategic response to a governance environment in which the state both claims leadership and delineates the boundaries of permissible local

action. Preemption clarifies legal boundaries and provides a politically comfortable justification for non-adoption in cities with Republican mayor.

Path C.4 can then be best characterized as *delegated inaction*. Republican-led small local governments' inaction calculus is moderated by political alignment with state leadership, strategically delegating climate actions to the state level. These local governments can justify non-adoption of a municipal climate plan as an appropriate division of labor across governance levels rather than as policy failure. A limited administrative capacity captured by SM further strengthens this calculus by lifting a small city's administrative responsibility for local climate policymaking. Non-adoption thus becomes both ideologically compatible with local officials' political orientation and strategically rational under capacity constraints.

H4a. Under a low level of climate risk, when a state has both environmental preemption laws and a climate action plan, but state and city leadership are Republican, a small city does not adopt formal climate plans.

The key difference in path C.5 from path C.4 is the partisan mismatch condition (RG-DM). While RG-RM facilitates politically comfortable *delegated inaction* (C.4), RG-DM produces a more defensive form of calculation. A Democratic mayor may recognize the value of independent climate action tailored to local contexts, yet the coexistence of state preemption and state climate plan creates an ambiguous environment.

State preemption constrains municipal discretion, yet the state climate action plan signals that climate governance is being addressed at higher levels, increasing the perceived legal and political risks of independent local action of a Democratic-led city within a Republican-led state. Limited administrative capacity (SM) further increases the expected costs of defiance by reducing the Democratic-led city's ability to resist potential intergovernmental retaliation. Local officials, therefore, engage in prudently choosing non-adoption as a protective response in a governance environment where the costs of resistance outweigh the city's institutional resources. In this sense, path C.5 reflects calculated *defensive inaction* aimed at avoiding conflict in a governance environment.

H4b. Under a low level of climate risk, when a state has both environmental preemption laws and a climate action plan, and the governor is Republican while the mayor is Democrat, a small city fails to adopt formal climate plans.

These pathways demonstrate that calculated inaction does not operate uniformly. Under a partisan match, state climate leadership can legitimize delegated responsibility for local climate action, framing non-adoption as a reasonable choice. When a partisan mismatch presents, inaction calculus becomes more defensive and risk-averse as misaligned local leaders anticipate higher political and legal costs of independent action. Across these two pathways, the underlying mechanism remains fundamentally *authority-driven*: local governments refrain from adopting climate policy because state

institutional signals to recalibrate the perceived locus of legitimate action and the expected costs of local initiative.

6.5 Summary

Most research treats state-local relations as either enabling (collaboration and coordination) or constraining (preemption), often implying a relatively uniform set of assumptions about local autonomy and external constraints (Agranoff & McGuire, 2003; Hughes, 2017; Riverstone-Newell, 2017; van Der Heijden, 2019). This chapter, instead, shows that the same broad institutional relationship can activate different decision-making mechanisms, with different implications for local action.

Local climate policy inaction is a product of multiple decision-making mechanisms operating in response to the relational dynamics between governance levels and administrative constraints, regardless of climate risk. Across five sufficient pathways, the findings show how combinations of intergovernmental relations, political dynamics, and local administrative capacity can illustrate distinct policy inaction types: *reluctant inaction* (resource constraints), *ideological inaction* (value alignment), *imposed inaction* (value foreclosure through coercion), *delegated inaction* (strategic compliance per value alignment), and *defensive inaction* (strategic compliance per value foreclosure). By mapping each pathway to the inaction typology, the analysis shifts attention from explanations based on individual constraints to a mechanism-centered account of how local climate policy non-adoption occurs. This dissertation makes theoretical contributions to the inaction literature by hypothesizing how different decision-making

mechanisms operate conjointly and why their outcomes vary across intergovernmental, political, and administrative contexts.

7 DISCUSSION

The dissertation sought to address a central yet persistently puzzling question in the policy literature: Why do some cities adopt policies while others remain inactive? By situating this question in the field of local climate policy, this dissertation contributes to our understanding of local climate governance when the impacts of climate change have emerged as one of the most pressing challenges of our time. Existing scholarship in the field has made partial progress in explaining this variation by identifying key drivers of local climate policy adoption using regression-based approaches. By explicitly examining both climate policy adoption and non-adoption within multilevel institutional arrangements using the configurational approach, this dissertation moves beyond variable-centered explanations toward a more configurational and context-sensitive understanding of local climate policymaking.

The analyses presented in Chapters 4 through 6 demonstrate that neither climate policy adoption nor non-adoption can be understood as the product of a single prominent driver. Instead, both outcomes emerge from distinct combinations of local political support and leadership, environmental problems, and administrative capacity, as well as legal and institutional constraints operating across governance levels. Using Qualitative Comparative Analysis (QCA), the dissertation shows that pathways to action are multiple and context-dependent, and that the absence of policy cannot be explained by simply inverting the logic of adoption. These findings, characterized by conjunctural causation, equifinality, and causal asymmetry, challenge prevailing assumptions in the policy

adoption literature that policy adoption follows a uniform trajectory and that inaction merely reflects a lack of enabling conditions.

This chapter proceeds in three parts. First, it synthesizes findings of the adoption and non-adoption analyses to highlight the dissertation's core theoretical contributions. Second, it translates the configurational insights into practical strategies that may help city practitioners diagnose and respond to different barriers to local climate action. Third, the chapter concludes with research limitations and future directions.

7.1 Research Implications

7.1.1 Theoretical Implications

7.1.1.1 Administrative leadership and capacity are the key conditions

This dissertation challenges a major finding in previous research: that public support is the strongest predictor of local climate policy adoption (Flynn et al., 2019; Massey et al., 2014; Opp et al., 2014; Rai, 2020; Yeganeh et al., 2020). This finding offers limited insight into why some cities adopted climate policies despite low local public support. Multiple cities in the U.S. exhibit this pattern (e.g., Anchorage, Phoenix, Jacksonville, Boise City, Fargo, see complete list in Appendix B). The configurational analyses in this dissertation demonstrate that Democratic mayoral leadership and administrative capacity (e.g., having dedicated sustainability offices or officers, membership in a transnational network, and a large city size) operate as more decisive enabling conditions across a wide range of institutional environments. These factors not

only facilitate adoption but also shape how cities respond to constraints, interpret risk, and navigate conflicts within multilevel governance.

In the adoption analysis, Democratic mayoral leadership appears repeatedly as a sufficient condition both in combination with other conditions and independently. Cities led by Democratic mayors adopted climate policies even in the absence of high public support, high climate risk, or strong administrative capacity. This finding highlights the role of political leadership as a catalytic policy “champion” who can prioritize climate action, mobilize coalitions, and drive local climate action even in challenging environments (Haus et al., 2004; Hughes et al., 2018). It also suggests that mayoral partisanship may serve as a more explicit manifestation of citizens’ environmental concerns and desire for climate actions than aggregate measures of public opinion, reflecting not merely what citizens prefer, but who they choose to execute those preferences.

A significant role of Democratic mayors is also evident in the non-adoption analysis. Their presence helps illuminate how different types of inaction arise across varying institutional contexts. Under unfavorable state constraints, particularly in Republican-led states with environmental preemption and low climate urgency, Democratic mayors in small cities choose non-adoption, reflecting *imposed* inaction. When these same state constraints are accompanied by statewide climate action plans, however, Democratic mayors exhibit *defensive* inaction. In these challenging institutional, political, and administrative environments, the decision-making mechanism

of inaction shifts as Democratic mayors weigh the anticipated legal and political costs of challenging state power and authority against their limited local capacity to act.

Government sustainability capacity plays a similarly decisive role. Like Democratic mayoral leadership, dedicated sustainability offices or officers enable local climate policy adoption regardless of public support, partisan leadership, or climate urgency. Prior research shows that dedicated staff, cross-departmental coordination structure, and fiscal capacity are pivotal in converting issue recognition, learning, and intention into formal policy outputs, determining not merely whether governments engage with climate issues, but whether that engagement produces concrete plans (Bae & Feiock, 2013; Frantzeskaki et al., 2019; Hawkins et al., 2016; Krause, 2011; Sharp et al., 2011).

Administrative capacity, proxied by city population size to capture fiscal and administrative resources, further illuminates the significance of resource constraints in explaining climate policy non-adoption. Inaction emerges due to a lack of staffing, coordination infrastructure, fiscal stress, and agenda congestion, which can prevent formal adoption even when political and institutional conditions appear favorable (Howlett & Ramesh, 2015; Wu, Ramesh, & Howlett, 2015). In a favorable state environment, where states implicitly encourage climate action through statewide climate action plans and the urgency to act is high, non-adoption in small cities led by Democratic mayors is attributable to limited resources rather than political or institutional barriers. While previous studies have argued that fiscal and resource constraints impede climate actions, other barriers are often present simultaneously (Homsy & Warner, 2015;

Massey et al., 2014; Moser & Ekstrom, 2010), making it difficult to isolate how and through which mechanism inaction occurs. The configurational approach disentangles these confounds, revealing how resource constraints alone can impede climate policy-non-adoption within an otherwise favorable institutional and political environment.

7.1.1.2 Preemption is not uniformly coercive

State preemption is often viewed as a uniformly constraining legal force that restricts, overrides, or nullifies local autonomy and have “chilling effect” on municipal policy innovation (Briffault, 2018; Briffault et al., 2023; Goodman et al., 2021; Riverstone-Newell, 2017; Rutkow et al., 2019). The findings of this dissertation challenge this dominant understanding by demonstrating that the presence of state environmental preemption does not map neatly onto a single coercive mechanism. Rather, preemption can activate different decision-making mechanisms and lead to both adoption and non-adoption outcomes depending on the institutional, political, and administrative contexts in which cities are embedded.

Conceptualizing state preemption laws and home rule authority through the “sword and shield” metaphor clarifies that institutional arrangements are not deterministic. The adoption analysis in Chapter 5 shows that cities under state environmental preemption are either “shielded” by home rule authority or are enabled by a combination of multiple local drivers (i.e., Democratic mayoral leadership, high climate risk, and ICLEI membership) to pursue climate actions even within institutionally constrained environments without home rule protection. These two pathways demonstrate that state preemption does not uniformly foreclose climate policy adoption. Rather, they

provide empirical evidence that cities can navigate institutional constraints through alternative pathways.

When inaction occurs under state preemption, it does not simply produce *imposed* inaction but leads to more nuanced inaction types. Unlike compliance-based inaction, which requires cities to sacrifice local policy preferences under state preemption, *ideological* inaction emerges when state and local leadership share Republican ideological commitments to deprioritizing climate action. In this case, state preemption does not simply function as a “chilling effect” but produces *ideological* inaction, reinforcing rather than imposing disincentives for local climate action even when climate risks are high.

The inaction logic again shifts to become distinctively *calculated* when state leadership is paired with preemption. Preemption narrows local authority, as the state climate plan simultaneously signals that the state is the authoritative body in managing the issue. These institutional signals create what scholars of multilevel governance describe as vertical authoritative coordination (Bulkeley & Betsill, 2013; van der Heijden et al., 2019), but with a crucial difference: authority is exercised to discourage rather than facilitate local action. Responding to this dual mechanism, local governments may strategically calculate their course of action and choose non-adoption to avoid unnecessary, costly, or legally risky local initiatives.

This distinction is theoretically consequential. It shows that state preemption should not be conceptualized solely as an externally imposed constraint but also as an institutional expression of shared values, capable of activating distinct decision-making

logics across small, resource-constrained cities. By separating the *presence* of preemption from the *mechanism* through which it operates, the findings advance existing scholarship by demonstrating that preemption is not a monolithic institutional force. Preemption can operate as coercion, influence, or authority depending on statewide climate policy direction and state-local partisan alignment within multilevel climate governance.

7.1.1.3 Multilevel tensions explain decision mechanisms to non-adoption

The dissertation examines intergovernmental conflicts within multilevel climate governance and reveals the underlying power dynamics shaping local climate policy by treating non-adoption as analytically distinct from adoption. Chapter 6 shows that the decision-making mechanisms driving inaction within multilevel environments are as theoretically rich and empirically varied as those driving action. These findings call for scholars to treat non-adoption as a phenomenon worthy of independent theoretical and empirical attention, rather than as a residual category.

Conventional accounts in multilevel climate governance typically assume that state climate plans facilitate local action by providing policy guidance, resources, and coordination mechanisms for municipalities (Hultquist et al., 2017). This enabling assumption is especially prevalent in scholarship that conceptualizes higher-level governments as collaborators or coordinators in multilevel policy systems (Agranoff & McGuire, 2003; van Der Heijden, 2019). In this view, state climate plans signal supportive vertical leadership, reduce uncertainty, and promote coherence across governance levels (Heinen et al., 2022; A. Jordan & Huitema, 2014). As a result, the

expectation in much of the literature is that state climate leadership should activate, not diminish, local initiative.

The *calculated* inaction pathways identified in this dissertation complicates this assumption. They show that state climate leadership can paradoxically function as a legitimating signal for local non-adoption, particularly when paired with preemption and when local administrative capacity is limited. When higher-level signals suggest that authority and responsibility rest primarily with the state (Goodman et al., 2021), local governments may strategically calculate their policy options and choose non-intervention (Bachrach & Baratz, 1963; McConnell & 't Hart, 2019).

Taken together, this dissertation advances configurational thinking in public administration and policy. Rather than assuming uniform policy diffusion across cities and symmetric explanations adoption and non-adoption, it demonstrates how local governments navigate contentious intergovernmental hierarchies and adapt strategically, even on climate policy. This configurational pattern helps explain why net-effects approaches can produce mixed or unstable findings about individual predictors such as public support, environmental risk, or preemption. The effect of any one condition depends on the constellation in which it is embedded. In this way, the dissertation contributes to multilevel climate governance scholarship by treating institutional arrangements and local capacities not as independent variables with uniform effects, but as components of causally meaningful configurations that generate distinct policy outcomes.

7.1.2 Practical Implications

This dissertation offers three practical implications. First, public administrators in cities struggling to adopt climate policy can use the findings as a diagnostic framework to identify the sources of their inaction. For example, when the challenge stems from low public support, the findings suggest that building government sustainability capacity through dedicated sustainability offices or officers can provide an alternative pathway to climate resilience that bypasses the need for broad public mobilization. For cities operating under state environmental preemption, the findings underscore the importance of clarifying legal authority: where home rule is available, securing it can shield local climate actions from state interference. Where home rule is not available, the findings suggest that cultivating a combination of Democratic political leadership, transnational networks, such as ICLEI, and administrative capacity can provide sufficient conditions to overcome institutional constraints.

Second, a mechanism-based understanding of the policy inaction offers practical strategies that go beyond interventions focused only on one barrier (e.g., increase resources, join a transnational network, or change the political leadership), which may fail when the underlying inaction mechanisms operate in configurations. For example, as exemplified in a case of Bridgeport, which is a *frontrunner* city (home rule without state environmental preemption) that exhibit *reluctant* inaction (McConnell & 't Hart, 2019), increasing funding and grant opportunities represent the most direct and effective pathway to unlocking climate policy adoption.

Third, the findings carry implications for the health of American federalism itself. Local governments effectively representing and articulating the preferences and desires

of their constituents are central to well-functioning federalism. But this must be predicated upon the condition that the preferences being represented genuinely reflect that of the local citizens. While local issues (e.g., provision of public goods and services by local governments) and their politics increasingly became nationalized (Hopkins, 2018), the concerns of local constituents remain the primary focus of local officials (Das et al., 2022). The findings of this dissertation complicate this assumption: when local climate inaction reflects ideological alignment with state partisan leadership rather than the genuine preferences of local constituents, local governments may be abdicating their representational function under the guise of political consistency. This is particularly consequential in the context of climate change, where the costs of inaction are borne locally through increased flood risk, heat exposure, and infrastructure vulnerability even when the politics driving that inaction are shaped by state or national partisan dynamics. A well-functioning federalism, then, requires not only that local governments have the capacity and authority to act, but that their policy choices genuinely reflect the needs and vulnerabilities of the communities they serve rather than the ideological commitments of higher-level political actors.

7.2 Research Limitations

This study examined the adoption of local climate policies using local planning documents on climate change and resilience. Relying on policy documents, such as Climate Action Plans, Climate Adaptation Plans, or Resilience Plans, as indicators of local climate action cannot conclusively determine the absence of climate policies or

activities when cities lack any of these documents. For example, Newark has not yet adopted a single, comprehensive citywide climate action plan; yet the city's Sustainability Office has initiated programs such as Love Your Block, Gen Green, and Nourishing Newark. However, these programs, operating in a piecemeal manner, are limited in their ability to achieve citywide climate goals and to meet targets against which their effectiveness can be measured. Planning for climate actions is becoming a preferred approach to enhance local climate resilience by addressing and managing uncertainty with specific strategies (Woodruff et al. 2022). While policy actions initiated in these plans do not translate directly into implementation (Pressman and Wildavsky 1984), it is worth noting that urban planning and land-use control are integral to municipal policymaking and can be leveraged by cities to address climate issues, as cities lack extensive regulatory powers (Farber and Carlane 2018).

The degree of conflict and the extent of legal power that state preemption laws impose on local governments remain subject to legal debate. The extent to which local authorities and powers granted by home rule can withstand state efforts to override them depends on judicial decisions that vary from case to case (Amsler and Vieilledent 2021). Additionally, the state preemption laws examined in this study do not specifically prohibit the *creation* of planning documents related to local climate actions. This means that some cities may have adopted plans they do not yet have the full authority to execute. While this limits our understanding of how effective state preemption laws were at discouraging or constraining local efforts in developing climate action and resilience

plans, these state laws can impose barriers, controlling local actions on climate change and environmental resilience.

In QCA, case selection and calibration thresholds involve researcher judgment. Given methodological constraints and the need for analytical clarity, empirically supported indicators that are found to influence local climate policy adoption were prioritized. Future research could adopt alternative criteria, such as overall heat vulnerability or rapid population growth in arid regions, to better capture contexts like Phoenix. Lastly, the choice of indicators used to measure and represent explanatory conditions can be different, as any social research is. For instance, the city's public support may be better reflected through the percentage of population with higher education or demographic composition (e.g., age, race) than results from the opinion survey.

7.3 Future Research

This dissertation's approach, examining the largest cities in each of 50 states, provides insights that may not generalize to smaller cities. If the study sample are expanded to smaller municipalities, which may have limited administrative capacity and lack home rule authority, we would see a much more binary impact of preemption. Large cities have the institutional resilience to find gray zones in the law. Smaller cities, lacking robust legal and administrative capacity, are much more susceptible to the chilling effect of state interference. This suggests that state preemption is not just an environmental issue: it is a capacity-tax on smaller local governments, further widening the gap between

resource-rich and resource-poor communities. Testing this proposition remains a fruitful path for future research.

This research focuses on the state-local relationship within the legal framework as a primary source of local climate policy outcomes. What is missing is details about local strategies and the dynamic nature of the relationship that contributes to the observed outcomes. Chapter 6 sets theoretical expectations about decision mechanisms of policy inaction, but the evidence is based on the small number of large cities in some states. It needs to be more thoroughly examined to solidify those insights using more evidence. Expanding the sample to include smaller cities offers one promising direction, and learning from city practitioners and planners offers another. An equally meaningful avenue for future research would be to examine strategies and dynamic interactions in the policy adoption process.

This dissertation focused on the adoption and non-adoption of local climate policy documents (CAPs, CAAPs, and RES) as the outcome conditions. The aim was to examine what local governments do and why they act or do not act. This builds on the assumption that these plans include local governments' climate policy goals, tools, targets, and strategies. While this is indeed the purpose of these documents, it does not imply that what is included in them (that is, how climate policies are designed) is consistent or homogeneous. As climate impacts vary across localities, their policy designs would vary accordingly. A closer examination of the policy content of each city as an outcome condition would be invaluable.

In the rational policy-making framework, sound policy design is a prerequisite of policy implementation. Building on these findings, further insight can be gained by examining the reality of local climate policy implementation more closely. How localities implement their climate policies and to what extent those policies have been implemented will provide valuable information and insight about the reality of local climate governance. This represents an opportunity to examine not only state-local interactions over climate policy but also how different sectors (public, private, non-profit, and civic) collaborate and conflict during the implementation of local climate policies. Additionally, by identifying local governments' climate policy goals and tools, future research can assess the effectiveness of their policy choices in mitigating climate impacts.

8 CONCLUSION

Climate change presents a distinctive governance challenge: its costs and benefits are diffuse, with no clearly identifiable group bearing the burden or capturing the gains. When costs and benefits are distributed this way, sustained political will is difficult to build, and government action tends to stall in the absence of a triggering event or a broad public consensus. In the United States, the federal government has largely failed to meet this challenge, shifting the burden of climate action disproportionately to cities. Yet cities themselves respond unevenly—some have developed formal climate action plans, others have not, and the reasons for this variation are poorly understood. That variation is not merely an academic puzzle.

As climate pressures intensify, understanding which cities act and which do not and why has direct consequences for environmental inequality and long-term climate preparedness. Even among cities, the severity and nature of climate-related risks differ, as do residents' levels of awareness and political engagement, resulting in meaningful divergence in whether and how climate policies are adopted. Which cities are taking meaningful steps toward preparedness? Which are not, and under what conditions? And why? These questions are not simply descriptive. They are urgent, and the answers are delicate.

This dissertation takes these questions seriously. It identifies the explanatory gaps in the existing literature on local government climate policy adoption and argues that these gaps cannot be closed simply by assembling more data or expanding the city sample. More data applied to the mis-specified framework produces more of the same

answer. What is needed instead is a different analytical logic: one that accommodates the genuine complexity of urban policymaking and attends to the delicate, often asymmetric relationships among the variables that drive or obstruct policy action and inaction.

The frameworks developed here do exactly that. By centering complexity rather than smoothing it away, this dissertation offers something the existing literature has largely failed to provide: a meaningful explanation for why certain cities do not act. In doing so, it reveals that prevailing studies have implicitly assumed a uniform process of diffusion—an assumption that generates significant theoretical blind spots and, more practically, leaves policymakers without adequate tools for understanding inaction.

The analytical framework developed in this dissertation is not confined to urban climate policy. It is extensible to a wide range of policy domains where costs and benefits are diffuse, political conditions are uneven, and variation in adoption is the norm rather than the exception. In this sense, the dissertation does more than contribute to one subfield. It points toward a new analytical direction—one defined by greater precision, greater theoretical humility, and a sharper capacity to explain the world as it is, rather than as our models have assumed it to be. As climate pressures mount and the stakes of inaction grow, that kind of understanding is not a scholarly luxury. It is a necessity.

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APPENDIX

A CASE SELECTION AND THE YEAR OF FIRST CLIMATE PLAN

State	City	Population in 2010	1 st Plan year
AL	Montgomery	204,788	
AK	Anchorage	284,267	2019
AZ	Phoenix	1,450,206	2021
AR	Little Rock	190,718	
CA	Los Angeles	3,772,486	2007
CO	Denver	578,087	2014
CT	Bridgeport	142,576	
DE	Wilmington	71,437	2022
FL	Jacksonville	811,833	2023
GA	Atlanta	413,462	2015
HI	Honolulu	337,256	2020
ID	Boise City	206,481	2021
IL	Chicago	2,703,466	2008
IN	Indianapolis	809,804	
IA	Des Moines	202,095	2023
KS	Wichita	373,725	2024
KY	Louisville/Jefferson County (balance)	586,994	2020
LA	New Orleans	295,285	2015
ME	Portland	66,138	2021
MD	Baltimore	620,538	2013
MA	Boston	602,609	2014
MI	Detroit	759,340	2017
MN	Minneapolis	379,631	2013
MS	Jackson	175,489	
MO	Kansas City	454,876	2008
MT	Billings	101,549	
NE	Omaha	407,334	2024
NV	Las Vegas	579,786	
NH	Manchester	109,791	
NJ	Newark	274,674	
NM	Albuquerque	531,403	2021
NY	New York City	8,078,471	2007
NC	Charlotte	705,896	2018
ND	Fargo	102,527	
OH	Columbus	770,407	2018
OK	Oklahoma City	563,571	
OR	Portland	566,686	2001
PA	Philadelphia	1,504,950	2007
RI	Providence	178,286	2019
SC	Charleston	116,347	2021
SD	Sioux Falls	148,848	2023
TN	Memphis	654,876	2021

TX	Houston	2,068,026	2020
UT	Salt Lake City	184,488	2019
VT	Burlington	41,935	2020
VA	Virginia Beach	435,996	
WA	Seattle	595,240	2013
WV	Charleston	51,432	
WI	Milwaukee	589,697	2023
WY	Cheyenne	57,935	2024

Source: US Census Bureau (2010)

APPENDIX

B RAW DATA FOR LOCAL CLIMATE POLICY ADOPTION

State	City	LCP	SP	HR	PS*	DM	CR*	SUS	ICLEI
AL	Montgomery	0	1	0	0	1	0	0	1
AK	Anchorage	1	0	1	0	1	0	0	0
AZ	Phoenix	1	1	1	0	1	1	1	0
AR	Little Rock	0	1	0	0	1	0	1	1
CA	Los Angeles	1	0	1	0	1	1	0	0
CO	Denver	1	0	1	0	1	1	1	1
CT	Bridgeport	0	0	1	1	1	1	1	1
DE	Wilmington	1	0	1	1	1	0	1	0
FL	Jacksonville	1	1	1	0	0	0	1	0
GA	Atlanta	1	0	1	0	1	1	1	1
HI	Honolulu	1	0	1	1	1	1	1	1
ID	Boise City	1	1	0	0	1	1	0	1
IL	Chicago	1	0	1	1	1	1	0	0
IN	Indianapolis	0	1	0	0	1	0	1	1
IA	Des Moines	1	1	1	0	1	0	1	1
KS	Wichita	1	1	1	0	1	0	1	1
KY	Louisville/Jefferson County (balance)	1	0	1	0	1	0	1	0
LA	New Orleans	1	0	1	0	1	1	1	1
ME	Portland	1	0	1	1	1	0	1	1
MD	Baltimore	1	0	1	1	1	1	1	1
MA	Boston	1	0	1	1	1	1	0	1
MI	Detroit	1	1	1	0	1	1	0	0
MN	Minneapolis	1	0	1	1	1	0	1	1
MS	Jackson	0	1	0	0	1	0	0	0
MO	Kansas City	1	0	1	0	1	1	1	0
MT	Billings	0	1	0	0	0	0	0	0
NE	Omaha	1	0	1	0	0	0	1	1
NV	Las Vegas	0	0	0	0	0	1	0	1
NH	Manchester	0	1	1	0	1	0	0	0
NJ	Newark	0	0	1	1	1	1	1	1
NM	Albuquerque	1	0	1	0	1	0	1	0
NY	New York City	1	0	1	1	0	1	1	1
NC	Charlotte	1	0	0	0	1	0	1	1
ND	Fargo	0	1	1	0	1	0	1	0
OH	Columbus	1	0	1	0	1	0	0	1
OK	Oklahoma City	0	1	1	0	0	1	1	0
OR	Portland	1	0	1	1	1	1	1	1
PA	Philadelphia	1	0	1	1	1	1	0	0
RI	Providence	1	0	1	1	1	0	1	0
SC	Charleston	1	1	1	0	1	0	1	1
SD	Sioux Falls	1	0	1	0	0	1	1	1
TN	Memphis	1	1	1	0	1	1	0	0

TX	Houston	1	0	1	0	1	1	1	1
UT	Salt Lake City	1	0	1	0	1	0	1	1
VT	Burlington	1	0	0	1	1	0	1	1
VA	Virginia Beach	0	0	0	0	0	0	0	0
WA	Seattle	1	0	1	0	1	1	1	1
WV	Charleston	0	1	1	0	1	0	1	0
WI	Milwaukee	1	0	1	1	1	0	1	1
WY	Cheyenne	1	1	1	0	0	0	0	0

Note: LCP: local climate policy adoption, SP: state preemption laws, HR: local home rule, PS: public support, DM: Democratic mayor, CR: high climate risk, SUS: government's internal sustainability capacity, ICLEI: transnational network. * PS and CR conditions are based on Appendix D.

APPENDIX

C NON-ADOPTION CITIES

State	City	Planning	Evidence
AL	Montgomery	No	Developing Climate Action Plan (July 17, 2025)
AR	Little Rock	No	Sustainability Action Plan (2025)
CT	Bridgeport	No	Developing Resilience Plan (Oct 20, 2025)
IN	Indianapolis	No	Sustainability Plan (2019)
MS	Jackson	No	State-level planning kickoff (News report on February 6, 2024)
MT	Billings	No	Billings Climate Week 2025, community-led nonprofit coalition held on September 14-18, 2025
NV	Las Vegas	No	County-level Community Sustainability & Climate Action Plan
NH	Manchester	No	State-level planning kickoff on September 17, 2024
NJ	Newark	No	Sustainability Action Plan (2013)
ND	Fargo	No	The Sustainability and Resiliency Committee, established in 2013 was dissolved on Dec.23, 2021
OK	Oklahoma City	No	Developing Comprehensive Climate Action Plan (June 2025)
VA	Virginia Beach	No	Sea Level Wise: Adaptation Strategy (2020)
WV	Charleston	No	Green Team Strategic Plan (2024)

APPENDIX

D CITIES AND THEIR HOME RULE

State	City	Home Rule (Russell & Bostrom, 2016)	Legal Source
AL	Montgomery		Alabama Constitution of 1901 limits Home Rule
AK	Anchorage	in State constitution (requiring enabling legislation)	Home Rule Charter, Code of Ordinances
AZ	Phoenix	in State constitution (self-executing)	Home Rule Charter
AR	Little Rock	through State legislative statute	Arkansas Constitution establishes home rule only for counties, not for cities (Arkansas Code § 14-43-601).
CA	Los Angeles	in State constitution (self-executing)	Home Rule Charter (first in 1888, revision 1925)
CO	Denver	in State constitution (self-executing)	Home Rule Charter (1902)
CT	Bridgeport	in State constitution (requiring enabling legislation)	Home Rule Charter (2016)
DE	Wilmington	through State legislative statute	Code of Ordinances (Article II)
FL	Jacksonville	through State legislative statute	Home Rule Charter (Article 3)
GA	Atlanta	through State legislative statute	Home Rule Charter (Section 1-102, 1965)
HI	Honolulu	in State constitution (self-executing)	Home Rule Charter (Section 2-101, 1954)
ID	Boise City		
IL	Chicago	in State constitution (self-executing)	No Charter but State Constitution designated municipality with population greater than 25,000 as a home rule unit
IN	Indianapolis	in State constitution (self-executing)	No Charter but State Constitution allows. However, self-governing power is

			and becoming more limited (Ice, 1948)⁹
IA	Des Moines	in State constitution (requiring enabling legislation)	
KS	Wichita	in State constitution (self-executing)	
KY	Louisville/Jefferson County (balance)	through State legislative statute	
LA	New Orleans	in State constitution (self-executing)	Home Rule Charter (1954)
ME	Portland	in State constitution (self-executing)	Home Rule Charter
MD	Baltimore		Article II of the Baltimore City Charter lists the express powers granted to the Mayor and City Council by the Maryland General Assembly
MA	Boston		City Charter
MI	Detroit	in State constitution (requiring enabling legislation)	City Charter
MN	Minneapolis	in State constitution (requiring enabling legislation)	City Charter
MS	Jackson		Home Rule is granted; however, lack of immunity from state preemption
MO	Kansas City	in State constitution (self-executing)	Code of Ordinances (Article I. Sec.102)
MT	Billings	in State constitution (self-executing)	Home Rule is granted; however, lack of immunity from state preemption
NE	Omaha	in State constitution (self-executing)	Home Rule Charter (1956)
NV	Las Vegas	in State constitution (requiring enabling legislation)	Relaxed Dillon's Rule through AB493 of

⁹ Ice, H. T. (1948). Municipal Home Rule in Indiana. *Indiana Law Journal*, 17(5).

			2015, but maintaining state oversight
NH	Manchester	through State legislative statute	City Charter (1996)
NJ	Newark	through State legislative statute	Code of Ordinances
NM	Albuquerque	in State constitution (self-executing)	City Charter (1971)
NY	New York City		State constitution
NC	Charlotte	through State legislative statute	
ND	Fargo	in State constitution (self-executing)	Home Rule Charter
OH	Columbus	in State constitution (self-executing)	Home Rule Charter
OK	Oklahoma City	in State constitution (self-executing)	Home Rule Charter
OR	Portland	in State constitution (self-executing)	
PA	Philadelphia	in State constitution (requiring enabling legislation)	Home Rule Charter (1951)
RI	Providence		State constitution
SC	Charleston	in State constitution (requiring enabling legislation)	
SD	Sioux Falls	in State constitution (self-executing)	Home Rule Charter
TN	Memphis	in State constitution (self-executing)	Home Rule Charter
TX	Houston	in State constitution (requiring enabling legislation)	State statute
UT	Salt Lake City	in State constitution (self-executing)	
VT	Burlington		
VA	Virginia Beach		
WA	Seattle	in State constitution (self-executing)	Home Rule is granted; however, lack of immunity from state preemption
WV	Charleston	in State constitution (requiring enabling legislation)	

WI	Milwaukee	in State constitution (requiring enabling legislation)
WY	Cheyenne	in State constitution (self- executing)

APPENDIX

E PUBLIC SUPPORT MEASURE

	2013	2014	2016	2016	2018	2019	2020	2021
National average	63.88	71.98	71.12	73.73	68.03	70.22	67.06	63.88
Standard deviation	3.92	3.82	3.89	3.48	3.99	3.88	4.38	3.92

Source. Yale Project on Climate Change (Howe et al., 2015).

APPENDIX

F DATA FOR PUBLIC SUPPORT AND CLIMATE RISKS

State	City	PS (z-score)	EED (#)	BD (#)	PCR1 (z-score)	PCR2 (z-score)
AL	Montgomery	1.46	15		1.60	1.38
AK	Anchorage	0.71	15		1.45	1.10
AZ	Phoenix	0.59	270		0.72	1.03
AR	Little Rock	1.18	17		1.65	1.41
CA	Los Angeles	1.77	23		1.79	3.47
CO	Denver	1.66	33		2.77	2.80
CT	Bridgeport	2.31	14		2.08	2.74
DE	Wilmington	2.00	13		1.21	1.68
FL	Jacksonville	1.27	42		1.08	0.80
GA	Atlanta	1.58	8		2.22	2.54
HI	Honolulu	2.43	15		3.09	3.37
ID	Boise City	0.90	89		1.13	0.31
IL	Chicago	3.58	30		3.19	3.13
IN	Indianapolis	1.77	16		0.92	1.25
IA	Des Moines	0.79	37		0.79	0.67
KS	Wichita	0.44	11		0.76	0.19
KY	Louisville/Jefferson County (balance)	1.17	21		0.99	0.86
LA	New Orleans	0.79	11		2.42	2.29
ME	Portland	2.25	14		1.51	1.56
MD	Baltimore	2.79	42		3.46	3.78
MA	Boston	3.14	20		3.70	3.78
MI	Detroit	1.75	10	Yes	1.01	1.20
MN	Minneapolis	2.66	16		2.02	2.10
MS	Jackson	1.75	18		0.82	1.21
MO	Kansas City	1.28	50		0.54	1.27
MT	Billings	-0.14	2		-0.39	-0.60
NE	Omaha	1.03	35		1.06	0.75
NV	Las Vegas	1.66	186		1.22	1.76
NH	Manchester	1.65	4		1.41	1.04
NJ	Newark	3.05	9		2.43	3.26
NM	Albuquerque	1.70	8		1.77	1.82
NY	New York City	2.16	35		3.30	3.51
NC	Charlotte	1.78	8		1.80	1.77
ND	Fargo	0.69	33		0.68	0.12
OH	Columbus	1.92	3		1.83	1.09
OK	Oklahoma City	0.79	104		0.77	0.63
OR	Portland	2.61	32		3.02	2.85
PA	Philadelphia	2.12	131		2.35	3.08
RI	Providence	2.11	6		1.53	1.74
SC	Charleston	1.18	32		1.40	1.09
SD	Sioux Falls	0.73	112		1.32	0.58
TN	Memphis	1.63	72		0.12	1.33

TX	Houston	-0.06	30	Yes	1.23	1.83
UT	Salt Lake City	1.30	2		1.64	1.23
VT	Burlington	2.56	10		1.57	1.81
VA	Virginia Beach	1.07	29		1.22	0.39
WA	Seattle	1.61	0		2.73	2.95
WV	Charleston	0.75	1		0.35	-0.04
WI	Milwaukee	2.17	22		1.02	1.76
WY	Cheyenne	-0.55	8		0.26	-0.34

Note: PS: public support, captured by the estimated percentage who somewhat/strongly support regulating CO₂ as a pollutant, EED: number of extreme event days, BD: experienced billion-dollar disasters during the study period. PCR1: perceived climate risk, captured by the estimated percentage who think global warming will harm plants and animal species a moderate amount/a great deal, PCR2: perceived climate risk, captured by the estimated percentage who think global warming will harm people in the US a moderate amount/a great deal.

APPENDIX

G MAYORAL PARTY AFFILIATION

State	City	Data year	Year 1	Year 2	Year 3	Year 4	Year 5
AL	Montgomery	2019-2023	R	D	D	D	D
AK	Anchorage	2014-2018	R	D	D	D	D
AZ	Phoenix	2016-2020	D	D	D	D	D
AR	Little Rock	2019-2023	D	D	D	D	D
CA	Los Angeles	2002-2006	D	D	D	D	D
CO	Denver	2009-2013	D	D	D	D	D
CT	Bridgeport	2019-2023	D	D	D	D	D
DE	Wilmington	2017-2021	D	D	D	D	D
FL	Jacksonville	2018-2022	R	R	R	R	R
GA	Atlanta	2010-2014	D	D	D	D	D
HI	Honolulu	2015-2019	D	D	D	D	D
ID	Boise City	2016-2020	D	D	D	D	D
IL	Chicago	2003-2007	D	D	D	D	D
IN	Indianapolis	2019-2023	D	D	D	D	D
IA	Des Moines	2018-2022	D	D	D	D	D
KS	Wichita	2019-2023	R	D	D	D	D
KY	Louisville/Jefferson County (balance)	2015-2019	D	D	D	D	D
LA	New Orleans	2010-2014	D	D	D	D	D
ME	Portland	2016-2020	D	D	D	D	D
MD	Baltimore	2008-2012	D	D	D	D	D
MA	Boston	2009-2013	D	D	D	D	D
MI	Detroit	2012-2016	D	D	D	D	D
MN	Minneapolis	2008-2012	D	D	D	D	D
MS	Jackson	2019-2023	D	D	D	D	D
MO	Kansas City	2003-2007	D	D	D	D	D
MT	Billings	2019-2023	R	R	R	R	R
NE	Omaha	2019-2023	R	R	R	R	R
NV	Las Vegas	2019-2023	I	I	I	I	I
NH	Manchester	2019-2023	D	D	D	D	D
NJ	Newark	2019-2023	D	D	D	D	D
NM	Albuquerque	2016-2020	R	R	D	D	D
NY	New York City	2002-2006	R	R	R	R	R
NC	Charlotte	2013-2017	D	D	D	D	D
ND	Fargo	2019-2023	D	D	D	D	D
OH	Columbus	2013-2017	D	D	D	D	D
OK	Oklahoma City	2019-2023	R	R	R	R	R
OR	Portland	1996-2000	D	D	D	D	D
PA	Philadelphia	2002-2006	D	D	D	D	D
RI	Providence	2014-2018	D	D	D	D	D
SC	Charleston	2016-2020	D	D	D	D	D
SD	Sioux Falls	2018-2022	R	R	R	R	R
TN	Memphis	2016-2020	D	D	D	D	D
TX	Houston	2015-2019	D	D	D	D	D

UT	Salt Lake City	2014-2018	D	D	D	D	D
VT	Burlington	2015-2019	D	D	D	D	D
VA	Virginia Beach	2019-2023	R	R	R	R	R
WA	Seattle	2008-2012	D	D	D	D	D
WV	Charleston	2019-2023	D	D	D	D	D
WI	Milwaukee	2018-2022	D	D	D	D	D
WY	Cheyenne	2019-2023	R	R	N	N	N

Note: D: Democratic, R: Republican, I: Independent, N: Nonpartisan.

APPENDIX

H BASELINE MODELS (MODEL A)

Model A: Conservative solutions

	Consistency	Raw Coverage	Unique Coverage
ps*DM*CR	1.000	0.297	0.189
DM*CR*sus	1.000	0.189	0.081
ps*dm*cr*SUS	1.000	0.054	0.054
PS*DM*cr*SUS	1.000	0.162	0.162
dm*CR*SUS*ICLEI	1.000	0.054	0.054
	1.000	0.649	

Model A: Parsimonious solutions

	Consistency	Raw Coverage	Unique Coverage
PS*cr	1.000	0.162	0.162
ps*DM*CR	1.000	0.297	0.189
dm*cr*SUS	1.000	0.054	0.027
dm*SUS*ICLEI	1.000	0.081	0.054
M1 PS*sus	1.000	0.081	0.081
M2 DM*CR*sus	1.000	0.189	0.081
M1	1.000	0.649	
M2	1.000	0.649	

Note. PS: public support, DM: Democratic mayor, CR: high climate risk, SUS: government's internal sustainability capacity, ICLEI: transnational network. Upper letters represent the presence of a condition, and lower letters represents the absence of the condition.

APPENDIX

I MODEL A WITH HIGH PUBLIC SUPPORT BASED ON Z-SCORE 1.4

Model A: Sufficiency paths with high public support based on z-score 1.4

Path	PS	DM	CR	SUS	ICLEI	Cities
A.1	•	•		•		Wilmington, DE, Albuquerque, NM, Providence, RI; Indianapolis, IN , Portland, ME, Minneapolis, MN, Charlotte, NC, Burlington, VT, Milwaukee, WI; Denver, CO, Bridgeport, CT , Atlanta, GA, Honolulu, HI, Baltimore, MD, Newark, NJ , Portland, OR, Seattle, WA
A.2	⊗	•		⊗		Anchorage, AK; Boise City, ID
A.3		•	•			Boise City, ID; Phoenix, AZ, Kansas City, MO; New Orleans, LA, Houston, TX; Los Angeles, CA, Chicago, IL, Detroit, MI, Philadelphia, PA, Memphis, TN; Boston, MA; Denver, CO, Bridgeport, CT , Atlanta, GA, Honolulu, HI, Baltimore, MD, Newark, NJ , Portland, OR, Seattle, WA
A.4		⊗	⊗	•		Jacksonville, FL, Omaha, NE
A.5				•	•	Omaha, NE; Sioux Falls, SD; Little Rock, AR, Des Moines, IA, Wichita, KS, Charleston, SC, Salt Lake City, UT; New Orleans, LA, Houston, TX; New York City, NY; Indianapolis, IN , Portland, ME, Minneapolis, MN, Charlotte, NC, Burlington, VT, Milwaukee, WI; Denver, CO, Bridgeport, CT , Atlanta, GA, Honolulu, HI, Baltimore, MD, Newark, NJ , Portland, OR, Seattle, WA

Note. • indicates the presence of the condition; ⊗ indicates the absence of the condition. An empty cell indicates that the condition does not matter. Same city can appear in multiple paths.

Model A: Truth table with high public support based on z-score 1.4

ID	PS	DM	CR	SUS	ICLEI	OUT	n	incl.	cases
1	0	0	0	1	0	1	1	1.000	Jacksonville (FL)
2	0	0	0	1	1	1	1	1.000	Omaha (NE)
3	0	0	1	1	1	1	1	1.000	Sioux Falls (SD)
4	0	1	0	0	0	1	1	1.000	Anchorage (AK)
5	0	1	1	0	1	1	1	1.000	Boise City (ID)
6	1	0	1	1	1	1	1	1.000	New York City (NY)
7	1	1	1	0	1	1	1	1.000	Boston (MA)
8	0	1	1	1	0	1	2	1.000	Phoenix (AZ), Kansas City (MO)
9	0	1	1	1	1	1	2	1.000	New Orleans (LA), Houston (TX)
10	1	1	0	1	0	1	3	1.000	Wilmington (DE), Albuquerque (NM), Providence (RI)
11	1	1	1	0	0	1	5	1.000	Los Angeles (CA), Chicago (IL), Detroit (MI), Philadelphia (PA), Memphis (TN)
12	1	1	0	1	1	1	6	0.833	Indianapolis (IN), Portland (ME), Minneapolis (MN), Charlotte (NC), Burlington (VT), Milwaukee (WI)
13	0	1	0	1	1	1	5	0.800	Little Rock (AR), Des Moines (IA), Wichita (KS), Charleston (SC), Salt Lake City (UT)
14	1	1	1	1	1	1	8	0.750	Denver (CO), Bridgeport (CT), Atlanta (GA), Honolulu (HI), Baltimore (MD), Newark (NJ), Portland (OR), Seattle (WA)
15	1	1	0	0	1	0	2	0.500	Montgomery (AL), Columbus (OH)
16	0	0	0	0	0	0	3	0.333	Billings (MT), Virginia Beach (VA), Cheyenne (WY)
17	0	1	0	1	0	0	3	0.333	Louisville (KY), Fargo (ND), Charleston (WV)
18	0	0	1	1	0	0	1	0.000	Oklahoma City (OK)
19	1	0	1	0	1	0	1	0.000	Las Vegas (NV)
20	1	1	0	0	0	0	2	0.000	Jackson (MS), Manchester (NH)

Note. ID: Configuration ID, PS: public support, DM: Democratic mayor, CR: high climate risk, SUS: government's internal sustainability capacity, ICLEI: transnational

network, OUT: output value assigned based on an inclusion cut-off threshold (i.e., 0.750), Incl.: sufficient consistency score. Some cities, like Bridgeport, CT, will be considered for solutions even if they did not adopt a climate policy, given the inclusion threshold. Cities in black font indicate those that have adopted local climate policy, and cities in red font indicate those that have not adopted the policy. White rows are included for logical minimization.

APPENDIX

J ADOPTION MODELS (MODEL B)

Model B: Intermediate solutions

		Consistency	Raw Coverage	Unique Coverage
	HR*dm*cr	1.000	0.081	0.054
	HR*DM*CR	0.889	0.432	0.081
	DM*CR*ICLEI	0.833	0.270	0.027
	sp*HR*SUS*ICLEI	0.882	0.405	0.054
	sp*DM*SUS*ICLEI	0.875	0.378	0.054
M1	sp*HR*DM	0.920	0.622	0.162
M2	sp*HR*cr	1.000	0.297	0.162
M3	HR*DM*SUS*ICLEI	0.882	0.405	0.081
M4	HR*cr*SUS*ICLEI	1.000	0.216	0.081
	M1	0.949	1.000	
	M2	0.949	1.000	
	M3	0.949	1.000	
	M4	0.949	1.000	

Model B: Parsimonious solutions

		Consistency	Raw Coverage	Unique Coverage
	sp*DM	0.926	0.676	0.189
	HR*ICLEI	0.909	0.541	0.135
	DM*CR	0.895	0.459	0.108
	HR*dm*cr	1.000	0.081	0.054
	Overall	0.949	1.000	

Note. SP: state preemption laws, HR: local home rule, DM: Democratic mayor, CR: high climate risk, SUS: government's internal sustainability capacity, ICLEI: transnational network. Upper letters represent the presence of a condition, and lower letters represent the absence of the condition.

APPENDIX

K NON-ADOPTION USING THE MULTI-LEVEL ADOPTION FRAMEWORK

Model D: Multilevel non-adoption sufficiency paths

Path IDs	Multilevel conditions		Local conditions				Cities
	SP	HR	DM	CR	SUS	ICLEI	
D.1	•	•	⊗	•	•	⊗	Oklahoma City (OK)
D.2	•	•	•	⊗		⊗	Manchester (NH); Fargo (ND), Charleston (WV)
D.3	•	⊗	•	⊗		•	Montgomery (AL); Little Rock (AR), Indianapolis (IN)
D.4	⊗	⊗	⊗	•	⊗	•	Las Vegas (LV)
M1	•	⊗	•	⊗	⊗		Jackson (MS); Montgomery (AL)
M2	•	⊗		⊗	⊗	⊗	Billings (MT); Jackson (MS)
M3	•		•	⊗	⊗	⊗	(Jackson (MS); Manchester (NH))

APPENDIX

L NOTE ON ASYMMETRY

Sufficient paths comparison between model B (multilevel-adoption) and model D (multilevel-non-adoption)

Path IDs	Multilevel conditions		Local conditions				Path IDs	Multilevel conditions		Local conditions			
	SP	HR	DM	CR	SUS	ICLEI		SP	HR	DM	CR	SUS	ICLEI
B.1	•	•	⊗	⊗		⊗	D.1	•	•	⊗	•	•	⊗
							D.2	•	•	•	⊗		⊗
B.2	•	⊗	•	•	⊗	•	D.3	•	⊗	•	⊗		•

Note. Applying the same multilevel framework to explain both local climate policy adoption and non-adoption creates a fundamental theoretical conflict in interpretation. Pathways that appear sufficient for adoption in one model similarly appear in non-adoption pathways in another, drawing consistent interpretation impossible. To illustrate this contradiction, the table juxtaposes the solution pathways from Model B (adoption) and Model D (non-adoption). Since Model B reports conservative solutions, Model D reports the same solution type to ensure comparability. Conflicting pathways are selected and compared within the same multilevel environments: *defiant* and *constrained* cities.

Defiant cities characterized by state environmental preemption (SP) and home rule (HR) are represented in path B.1 of Model B and paths D.1 and D.2 of Model D. Path B.1 shows that HR provides sufficient institutional protection for cities to adopt climate policies under state constraints. This pathway does not require Democratic mayoral leadership (dm), high climate risk (cr), and ICLEI membership (iclei). However, paths D.1 and D.2 show that even when HR is combined with additional local drivers, such as CR and government sustainability capacity (SUS) or DM, cities still do not adopt climate policies. The same institutional condition that suffices for adoption in path B.1 appears in pathways leading to the opposite outcome in paths D.1 and D.2. The theoretical contradiction persists for *constrained* cities (SP without HR). Path B.2 shows that cities lacking HR can compensate by assembling multiple local drivers, such as DM, CR, and ICLEI, to support adoption. Path D.3 shows a similar path with an opposite result: DM combined with ICLEI leads to non-adoption.

APPENDIX

M RAW DATA FOR LOCAL CLIMATE POLICY INACTION

State	City	NOLCP	SP	SCAP	SCP	DG	DM	G-M	SM
AL	Montgomery	1	1	0	2	0	1	1	0
AK	Anchorage	0	0	1	0	0	1	1	0
AZ	Phoenix	0	1	1	1	0	1	1	0
AR	Little Rock	1	1	0	2	0	1	1	1
CA	Los Angeles	0	0	0	0	0	1	1	0
CO	Denver	0	0	1	0	1	1	0	0
CT	Bridgeport	1	0	1	0	1	1	0	1
DE	Wilmington	0	0	1	0	1	1	0	1
FL	Jacksonville	0	1	1	1	0	0	2	0
GA	Atlanta	0	0	0	0	0	1	1	0
HI	Honolulu	0	0	0	0	1	1	0	0
ID	Boise City	0	1	0	2	0	1	1	0
IL	Chicago	0	0	1	0	1	1	0	0
IN	Indianapolis	1	1	0	2	0	1	1	0
IA	Des Moines	0	1	0	2	0	1	1	0
KS	Wichita	0	1	0	2	1	1	0	0
KY	Louisville/Jefferson County (balance)	0	0	0	0	0	1	1	0
LA	New Orleans	0	0	0	0	0	1	1	0
ME	Portland	0	0	1	0	0	1	1	1
MD	Baltimore	0	0	1	0	1	1	0	0
MA	Boston	0	0	1	0	1	1	0	0
MI	Detroit	0	1	1	1	0	1	1	0
MN	Minneapolis	0	0	0	0	0	1	1	0
MS	Jackson	1	1	0	2	0	1	1	1
MO	Kansas City	0	0	0	0	0	1	1	0
MT	Billings	1	1	1	1	0	0	2	1
NE	Omaha	0	0	0	0	0	0	2	0
NV	Las Vegas	1	0	1	0	1	0	1	0
NH	Manchester	1	1	1	1	0	1	1	1
NJ	Newark	1	0	1	0	1	1	0	0
NM	Albuquerque	0	0	0	0	0	1	1	0
NY	New York City	0	0	0	0	0	0	2	0
NC	Charlotte	0	0	1	0	0	1	1	0
ND	Fargo	1	1	0	2	0	1	1	1
OH	Columbus	0	0	0	0	0	1	1	0
OK	Oklahoma City	1	1	0	2	0	0	2	0
OR	Portland	0	0	0	0	1	1	0	0
PA	Philadelphia	0	0	0	0	0	1	1	0
RI	Providence	0	0	1	0	1	1	0	1
SC	Charleston	0	1	0	2	0	1	1	1
SD	Sioux Falls	0	0	0	0	0	0	2	1
TN	Memphis	0	1	0	2	0	1	1	0

TX	Houston	0	0	0	0	0	1	1	0
UT	Salt Lake City	0	0	0	0	0	1	1	1
VT	Burlington	0	0	0	0	0	1	1	1
VA	Virginia Beach	1	0	1	0	0	0	2	0
WA	Seattle	0	0	1	0	1	1	0	0
WV	Charleston	1	1	0	2	0	1	1	1
WI	Milwaukee	0	0	1	0	0	1	1	0
WY	Cheyenne	0	1	0	2	0	0	2	1

Note: NOLCP: local climate policy non-adoption outcome, SP: state preemption laws, SCAP: state climate action plans, SCP: state-level climate policy direction {0 = SCAP or either, 1 = SP & SCAP, 2 = SP only}, GOV: Democratic governor, DM: Democratic mayor, G-M: partisan mismatch between governor and mayor {0 = DG-DM: Democratic governor-Democratic mayor, 1 = RG-DM: Republican governor-Democratic mayor or DG-RM: Democratic governor-Republican mayor, 2 = RG-RM: Republican governor-Republican mayor}, SM: small city, Transnational network (ICLEI) and high climate risk (CR) are not shown in this table. See Table 5.1 for the calibration of conditions.

APPENDIX

N NON-ADOPTION MODELS (MODEL C)

Model C: Intermediate (also parsimonious) solutions

		Consistency	Raw Coverage	Unique Coverage
	CR*DG-DM*SM	1.000	0.077	0.077
	cr*SP*RG-DM*SM	0.800	0.308	0.308
	cr*SP & SCAP*SM	1.000	0.154	0.154
M1	CR*SP*RG-RM	1.000	0.077	0.077
M2	SP*RG-RM*SM	1.000	0.077	0.077
	M1	0.889	0.615	
	M2	0.889	0.615	

Note. CR: Climate risk, SP: state preemption laws, SCAP: state climate action plans, DG-DM: Democratic governor-Democratic mayor, RG-DM: Republican governor-Democratic mayor, RG-RM: Republican governor-Republican mayor, SM: small city. Upper letters represent the presence of a condition, and lower letters represent the absence of the condition.

BIOGRAPHICAL SKETCH

Jieun Kim was born in Seoul, South Korea on June 9, 1986. She received her elementary and junior high education in Korea. She completed secondary education at Monte Vista Christian School in Watsonville, California in the U.S. In 2005, Jieun entered the Rhode Island School of Design (RISD), majoring in architecture. She earned Bachelor of Architecture in 2010 from RISD. Upon graduation, she joined AGER Group-Boston, a landscape architecture firm specializing in architecture, landscape architecture, and urban design. In 2016, she earned Master of Urban Planning from the College of Architecture, Art, and Planning at Cornell University. During her graduate years, she interned at the Food and Agriculture Organization of the United Nations (FAO) in Rome, Italy. She worked as an urban planning consultant in Uzbekistan before starting her doctoral education in public administration and policy in the School of Public Affairs at Arizona State University from 2019. Her daughter, Seoelle Kim Choi, was born in 2020. She came back to the school in Fall 2021 and has studied the distribution of green spaces, its equity implications, and local climate policy under the supervision of Professor Yushim Kim until Spring 2026. She earned her Ph.D. in public administration and policy in Spring 2026 and starts her assistant professor position at the Old Dominion University in Virginia, starting from July 2026.